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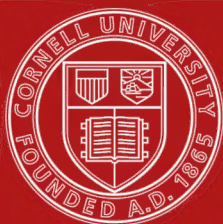
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Report of the Select Committee on Transp



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REPORT

OF THE

U.S. Congress, Senate,

SELECT COMMITTEE ON TRANSPORTATION-ROUTES 3 TO THE SEABOARD,

WITH

APPENDIX AND EVIDENCE.

APRIL 24, 1874.—Ordered to be printed.

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PROCEEDINGS OF SENATE COMMITTEE ON TRANSPORTATION ROUTES TO THE SEABOARD.

FIFTH AVENUE HOTEL,
New York City, September 11, 1873.

The CHAIRMAN. I believe the committee are ready to proceed, and as the gentlemen present to-day are nearly all the representatives of railroads, I wish to say to them that the object of the appointment of this committee was to secure, if possible, cheaper transportation between the sea-board and the interior.

There are evidently two sides to the question. There is the railroad side and there is the side of those who claim that the railroads are charging too much, and that they are not working in the interests of the people. The committee desire that the gentlemen present having heard this general expression, may state to us their views with reference to the transportation question. I have submitted to a number of gentlemen an outline of the inquiries that we wish to make, and we will either submit questions to the gentlemen called upon or permit them to make such statements, with reference to this general question, as they may deem proper, and we will then follow it by such questions as may be suggested to our minds.

I am told that Mr. Hayes and Mr. Kneass will make some statements with reference to the freight lines, and I have been requested to ask that they should make those statements first.

Mr. HAYES, General Manager Blue Line Fast Freight, Detroit, Mich. :

GENTLEMEN OF THE COMMITTEE : The statement that I wish to make more particularly is in regard to through fast freight lines. The mind of the public seems to have been in error with regard to these lines. To give you a full history of their origin, their operations, and matters connected with them, it may become necessary to go back a little in the history of transportation, in order to show why they were formed and their continued progress and their present organization, their connection with the producer and the consumer, as well as their connection with the roads.

You will recollect that the great grain-producing country of the West borders very largely upon the lakes, and the lines of roads running from lake ports into the interior of the country are very largely engaged in bringing this produce to the lake ports, such as Chicago, Milwaukee, Racine, Green Bay, and other points, where it meets with the lake craft that bring it to Buffalo. There it is transferred to the canal for New York. The rates of that lake transportation have varied more than the rates of freight on any — the percentage has been greater, the fluctuations greater than on any road or on the canal. Commerce, like water, regulates itself and finds its own level. Therefore, when that grain can be taken into a vessel at Chicago, brought to Buffalo for 5 cents a bushel, and from Buffalo to New York for 10 cents a bushel, as it was done through the month of August last, we find that there is 15 cents for fifteen hundred miles of water navigation, which covers the insurance

from Buffalo, as well as the canal-tolls. That, at its lowest, we will say is but one cent per bushel for a hundred miles of lake and canal transportation.

The lakes furnish ample room for navigation; no "monopoly" on them. The Erie Canal is furnished by the State of New York for any one to use that chooses to build boats and run them. In 1862, the grain received at Buffalo was 58,642,344 bushels. The tolls collected on all the New York State canals was \$5,188,943 for that year. The grain receipts and shipments continued to decrease until 1869, when the shipments by canal were down to 37,014,728 bushels, and the canal-tolls fell off to \$3,778,501. Railroad facilities had multiplied so rapidly and rail-rates became so much reduced by the operation of through-lines of cars that the State found it necessary to reduce the tolls on the canal to keep pace with the general reduction. The grain trade again increased via Buffalo until 1872, when it was 58,447,822 bushels, 194,522 bushels less than it was ten years before, and the total tolls collected was \$2,116,531 less than in 1862, while the total tons moved was only 6,673,370 tons in 1872.

The boats on the canal in 1862 registered an average of about 141 tons each. They now average about 250 tons each. Therefore, while there has been no enlargement of the Erie Canal, the old smaller-sized boats have passed out of existence to a certain extent, and they have been replaced by a class of boats nearly double their size, so that, while the capacity of the canal itself has not been very much altered, the capacity of the boats has so changed that the tonnage of the canal has grown from some 4,500,000 tons a year up to a capacity of 11,000,000 tons a year. That part of the business, of course, continues only through the season of navigation and only reaches New York and the towns tributary to the canal and Hudson River.

The development of the business of the country is such that the produce has to reach the interior of New England and to be brought to lake towns and kept there in store in large quantities through the winter at high and continuous costs to the producer or the man who has to hold it.

It therefore became necessary that the producer and the consumer should be brought closer together during the winter-months as well as the summer-months. In order to do that and to furnish business for the railways, it became necessary that through-lines should be established for the purpose of taking this property from the nearest railway station, where it is produced to the party who consumes it in the East. Therefore that business, in order to compete with the low prices of water navigation, had to be done without the cost of handling at the end of each company's road. If the one company hauled it a hundred miles, it was at the expense of unloading and putting it in the next company's car and hauling it two or three hundred miles more, and re-handling until it reached its destination for one or two thousand miles; the handling alone to and from the different companies' cars would be more than the water-navigation charges.

Therefore these companies arranged among themselves, by which each road would put in a certain quota of cars, and form a through-line, by which the business could be done through one management. Those cars belong to the roads, and they are placed in the hands of a manager to manage the business for the joint interest of all the roads. The cars are not owned by outside parties; they are not operated by outside parties, but are the joint co-operation of all lines together through one management. When a line-bill is made at Saint Louis for Boston, the en-

tire charges are shown ; a tissue copy of that bill comes to my office. We there make up the earnings of the lines ; we settle all over-charges, losses, and damages, or anything connected with the lines, and prorate it over all the lines, and there is no man outside of the railroad companies themselves who receives one farthing of profits growing out of the business. It simply facilitates the handling of the property from the place of production to the place of consumption.

In the month of November last, I think the "Blue Line" cars run on 124 different roads for that one month. A car loaded here for San Francisco passes through without transfer or handling, and the mileage for that car is reported to me clear through to the Pacific coast. The company owning that car gets credit for the mileage for its own line through my accounts, and the mileage balances are settled with the railroads each month upon the clearing-house system.

Whatever balances there are over and above what they ought to have made as their pro rata share of the total miles, is paid them in money from my office once a month. Therefore these lines have become such a necessity to the country that it would be utterly impossible for it to abandon them. The farmer of the West, if he lives at a railway station, can order his car, and put his four hundred bushels of corn into it, and send it to any man he likes in New England, at the current rate of freight, which has been gradually reduced from time to time, until at the present time, or through the summer months, when it gets down to about 20 to 22 cents a bushel. Instead of the property going in vessels by large quantities, where he has to provide a capital for this large quantity, and provide storage for it at its destination, taking the chances of the rise and fall in the market, and the insurance, he simply sends four hundred bushels at a time from the place of production to the place of consumption, and the next day, or the same day, he can draw against that four hundred bushels, to buy another car-load, so that his daily wants are constantly supplied through the means of these through-lines. Therefore the nature of the business, so far as New York is concerned, has become somewhat changed.

While there is the same amount of property, or more property, moved, it is not moved through the same channels, and is lost sight of, because it is done in a smaller way, and passes into the hands of the consumers without being reported through the ordinary channels of reporting such receipts and disbursements. The effect of that system of doing the business has been such that the railroad capacity has been taxed at certain times very largely, and some considerable fault has been found with the management of railroads, in consequence of facilities not being furnished to do the business. The great trouble will be found to be at the destination. When you arrive at New York with large quantities of grain, and the consignee here expects to receive the identical grain that is in that car, he must as a matter of necessity provide a barge for its being taken out. Suppose we have fifty cars of No. 2 Chicago spring wheat coming in here to fifty different consignees, on the same day, and they expect the same wheat, you will have to have fifty barges to discharge it, while if that could be done by inspection, as it is done in Chicago and every other large lake port, those fifty cars of grain could be discharged with the proper facilities, such as we have in Detroit, in fifteen minutes. They can discharge six cars in one elevator at Detroit, sweep the cars and move them out, in four minutes. There are six places to drop the grain into, and it is done by steam shovels. That would give you the use of the cars immediately to return, and give you the use of the tracks to

move more on; the difficulty is not in the moving of the cars over the lines, but it is in receiving the property when it reaches its destination.

The inspection of the grain at New York, by which this property can be discharged rapidly, would obviate a very large proportion of the trouble that we now labor under. The charges upon the property after it arrives here to go from the cars to the barge, from the barge to the elevator, from the elevator back to the barge, from the barge to the ship, is more than one quarter of the present charge from Chicago here. That is an item, that has a very large share of expense attached to it, which should be avoided. That is, of the present rate upon the same property by lake and canal from Chicago to this port.

By Mr. SHERMAN:

Question. How many cents a bushel?

Answer. It would be about 4 cents a bushel, the weighing and altogether. Large warehouses at convenient points for railway cars to discharge at a cheap rate of storage, elevating and storage, so that a man could afford to hold his property at New York or Boston or the sea-board towns, rather than the western towns, would equalize the business to a very great extent and hold the property here instead of the West. The parties holding the grain at the West, where it is in store at a cheap rate of storage, particularly that which is destined to the sea-board, hold it for a favorable turn of the market. When the price goes up one or two cents per bushel, everybody wants to ship the same day. Now it is utterly out of our power to carry all the property in one day or two days, but if they will spread that over the time, the capacity to move that property on a daily average of movement has never yet been exhausted.

The tonnage of the canal alone, with double locks of suitable size, is equal to 11,000,000 of tons a year eastward bound in the two hundred days of navigation. Their entire tonnage for 1872 on all the canals of New York State, both ways, was only 6,672,000 tons. The capacity of the railroads to move to the sea-board, to all the different points, is estimated at about 30,000 tons per day.

The capacity of the water-routes, by canal, the Saint Lawrence, the Mississippi, and the other water-communications to the sea-board, is equal to about 75,000 tons per day, so that if the business was equalized, it makes a capacity to move, if it was equally distributed over the time, equal to 105,000 tons per day. Take that for a year and you have a tonnage equal to seven and a half tons for every man, woman, and child of the whole United States west of Buffalo.

There are about 67,000 miles in the whole United States. The mileage of these railroads now exceeds the mileage of the railroads of all Europe combined. The tonnage of all the railroads amounts to about 225,000,000 of tons per year. But to speak of this particular locality, the grain region, which we are now discussing, to transport property from the west to the sea-board. There is now in operation in Ohio, Michigan, and western States and Territories north of the Ohio River and east of the Rocky Mountains, Missouri, Kansas, and Colorado, and north of them, 28,778 miles of railroads owned and controlled by about two hundred different sets of men as stockholders, represented through their boards of directors, many of them coming into direct competition with each other for a comparative limited traffic. These roads, with their equipments, have cost an average of \$50,550 per mile. The total earnings, less actual working expenses, give an average of 2.83 per cent. on all the capital. But as nearly one-half of the entire cost is

represented by bonds bearing from 7 to 10 per cent. interest, it will be seen that some roads do not, because they cannot, pay even the interest upon their bonds, much less dividends, to their stockholders, while at the same time they open up the vast resources of the country and bring the farmer into immediate connection with the consumer through available markets at a comparative trifling cost, which has more than trebled the value of his productions, as well as his real and personal estate.

As to railway-communication from Buffalo east, you are aware the New York Central Road are putting four tracks, the Midland Road will be completed, and while these lines are doing this business in that way, if the property could be so offered here that it could be moved equally over the road, our capacity, as I said before, is very far from being exhausted. That seems to be the vital point now, to provide a storage capacity at the East, so that this property can be moved here. Unless that is done, of course there is no necessity for any further roads being built, because the same thing would operate upon all roads. Supply and demand regulates the movement of the property. Therefore, if the price was down here and the storage was less there than here, it would remain there until the price here warranted its movement. As soon as that is done, you would have the same difficulty again. It would all want to move in one or two days. We go very far toward supplying that immediate demand, and the consequence is that we get so much property in here that all of a sudden the price goes down; they do not realize what they expected to and shipments fall off, so that our cars again stand idle, waiting for another spasmodic effort in the price to bring it forward.

Those are the difficulties that we labor under, and not the want of facilities to move it.

One of the schemes that will probably be brought before you is the Niagara Ship Canal, from Lake Erie into Lake Ontario. That question, you will see at once, should not receive any favorable attention. The moment that you get into Lake Ontario you have opened the traffic to Montreal, one of the very points that we wish to steer clear of. If the St. Lawrence is a natural outlet, and by the building of this canal into Lake Ontario, the business can be thrown into Montreal, we throw it out of our hands entirely to do the business, and out of our own commercial centers for doing it. But the disadvantages of that route are so great that it will never amount to anything, even though it was carried through. The dangers of navigation of the St. Lawrence, of course, are familiar to navigators; and it is only about seven months of the year that that route is open at all.

When you get out to the ocean for Liverpool, you only meet the markets of Liverpool after you have got there. Therefore your grain in Liverpool, in very large quantities, is in an unsalable market, and when that market is supplied, there is an end of that business. We take it that New York is the commercial center of this country, and the ships of all nations come to New York with goods. With them they bring the orders for grain to all parts of the world, as return freight. Therefore, facilities for bringing this property to New York or Boston or Philadelphia or Baltimore is a more legitimate thing than opening a route by ship canal that would afford people entirely outside of our country the advantage of doing our business for us.

By Mr. CONKLING:

Q. Would not the dangers of navigation on the Saint Lawrence speak

in favor of the Oswego Canal route, as a part of the Niagara Falls ship-canal scheme?

A. When you pass from Lake Erie into Lake Ontario and to Oswego, how do you propose to get to New York from there until you go back into the Erie Canal again at Syracuse, through lifting-locks up to the level of the Erie Canal at Syracuse? The difference in the freight, and the cost of passing through the Niagara ship-canal to Oswego and up to Syracuse again, is considerably more than the difference in freight from Buffalo to Syracuse; therefore, you have only gone a roundabout way to reach the same point.

By Mr. SHERMAN:

Q. What is the lockage from Oswego up to Syracuse?

A. I do not know the number of locks, but there must be quite a number, because there is a large descent of the water to the lake. You have got back to the same channel.

Mr. FOSTER (bystander) states that it is about 180 feet.

Mr. HAYES. Therefore your water communication, whether by canal or river, to all northern points must be closed the greater part of the winter, and there is no want of facilities until navigation is closed. When it is closed, then the railways are taxed to bring the property forward from the West, and it is to meet that demand that the increased railways, if any, are needed. During the summer-months there is now no lack of facilities, because the gradual increase of the tonnage of these boats has imperceptibly grown without any increase of the canal facilities—that is, the size of the canal. But when the lake, and river, and canal navigation becomes closed, then we find the increased facilities needed by railways.

And right here I would say that the complaint made is, that as soon as navigation closes, railways come in and charge larger rates. Well, that is like everything else; the supply and demand regulate that to a certain extent. Then, every one familiar with the operations of railways must know that it costs a great deal more to run a railway in winter than in summer.

By the CHAIRMAN:

Q. Right at that point stop to tell us why, if you please.

A. Because there is a great deal more night-work, and also because of the frost in the road-bed. Snow and ice we have to contend against delays trains. You cannot haul trains during the winter-months anything like as large through storms as you can through the summer-months. It makes no difference at all whether you have a train of ten or thirty cars; you have to have engineers, firemen, brakemen, and conductors, whether the train is large or small. Therefore, if you only haul small trains in the winter, you increase your expenses very largely without a corresponding increase of prices to meet it.

Q. I had no doubt that there was an increase of expenses, but I wanted you to state in what it consisted.

A. You have to have additional track-men to clear the ice from the track, from the wheels, and everything of that sort. The increased expense of operating that road is considered more in the winter than the increase in rates.

By Mr. SHERMAN:

Q. What per cent. is your estimate, sir?

A. I should think it would cost nearly a quarter more in winter than in summer.

By Mr. NORWOOD:

Q. Then your profits in winter are less than in summer?

A. The net profit, if it was separated between the summer and winter operations of the road, I think would be less in winter than in the summer, notwithstanding the increased prices. And it is this increase that is complained of, and they put it upon the ground that it is because water communications are closed.

I think that covers nearly all that I now have in mind with regard to the operations of these through-lines. They were established for the purpose of meeting this very demand and necessity of the changed manner of doing business, so that the producer could get a car to his own door and ship it to his own friend anywhere he liked at the current rate, without the intervention of middle-men at all.

By Mr. SHERMAN:

Q. Are not some of these freight companies organized by an association of capitalists or individuals distinct from the railroad companies?

A. Nothing of the sort, sir.

Q. You correct an impression that I had formed myself, that some of the freight lines were incorporated companies of associated capitalists.

A. No, sir; my office is the office of the joint railroad companies combined. My salary and the salary of my staff is all paid monthly; and all vouchers for overcharges, losses, damages, locks, seals, way-bills, stationery, and all that sort of thing, for the purpose of doing this business, is all done in my office.

Q. It is furnished by each company?

A. Furnished by me at my office. I furnish it myself for the lines. Once a month we have a meeting of the general freight agents of these lines, and that expense is prorated in proportion to the earnings of the roads in these cars and is paid to me monthly.

Q. By the companies?

A. By the companies.

By the CHAIRMAN:

Q. Of what freight companies do you speak?

A. I speak now for the "Blue Line." The "Blue," "Red" and "White" lines, "Milwaukee Line," and all that I am aware of that pass over the New York Central Road, are upon the same basis.

By Mr. CONKLING:

Q. May I inquire what is your office which you have described?

A. My office is general manager of the Blue Line for joint account of all the railroads combined.

Q. Located in New York?

A. Located in Detroit. I would state that the New York Central Railroad, so far as they are concerned, or the Boston and Albany Road, have no voice whatever in the making of rates eastward-bound. The rates are made by the general freight agents of western roads centering in Chicago. They get together and find what the water communications are doing—their rates, &c., and base their rates upon that as a competing rate. They don't even consult the Boston and Albany Road, the New York Central, or any road east, at all. They establish their tariff, and under that tariff the roads are obliged to take their pro rata of it, if it is not but 10 cents a hundred.

Q. And this convention of freight managers gauge their freight tariff by the water-rates and not by the cost of doing the business?

A. They have to gauge their rates by the rates of competing lines, for the simple reason that the rate carries the property. Therefore, if water-rates are so much below railroad-rates, we cannot expect to carry it. Therefore, they have, to a certain extent, to make up their tariff as against competing lines, whether it is water or rail. For instance, if there is a short line of rail into Baltimore, and they are taking property for a cent a ton a mile, and we cannot haul it, taking less than that, and their shorter distance gives them the preference, we have to make our tariff to correspond with those competing lines, and whatever that tariff is, the New York Central and Boston and Albany Road have no voice in it at all. They take their pro rata of that rate, and are satisfied, or must draw out.

By Mr. DAVIS:

Q. Where does the power come from; who gives it to the agent there to regulate it?

A. That is done by a joint arrangement with the roads East and West. The roads from the East make the rates on the property moving to the West, and the roads from the West make the rates on the property moving to the East.

Q. How is it divided between the main lines coming East; how is it prorated?

A. The same rate per ton per mile.

Q. That is not my meaning. Suppose you have a thousand tons to come, who regulates what road shall take it—what route it shall take?

A. The shipper himself, or consignee.

By Mr. CONKLING:

Q. What roads does the "Blue Line" traverse?

A. The Eastern Road from Portland to Boston, Boston and Albany Road, Providence and Worcester, Worcester and Nashua, Housatonic, Hudson River, and New York Central. The Great Western of Canada, Michigan, Central, Jackson, Lansing and Saginaw, Detroit, Lansing and Lake Michigan; Fort Wayne, Jackson and Lansing, and the Eel River Road; Chicago, Burlington, and Quincy; Illinois Central, Chicago and Alton, Chicago and Northwestern and the West Wisconsin which come into Saint Paul. But the cars are not restricted to these roads. The cars go anywhere where they are asked for; and as I said before, I think in the month of November last the cars ran on 124 different roads, going into nearly all the New England towns and the towns of the West, and from the East through to the Pacific Coast.

Q. All the roads you have named are proprietors of the Blue Line?

A. Yes, sir; and have cars in the line.

Q. As you understand it, is there a difference among these various roads in the actual cost of moving freight?

A. There are sometimes differences in the cost of moving property. Where one road would have heavy grades and another road would have no grades, of course the road having the heavy grade would cost them more to move that per ton per mile than the other. That is their misfortune. They get no more for hauling it than the other.

Q. So that in this arrangement you prorate upon mileage alone?

A. Yes, sir; the same rate per ton per mile each road.

Q. Taking the actual illustration given by this list of roads, what is the difference in actual cost of moving freight between the road which can do it cheapest and the road whose grade and alignment makes it dearest?

A. To go into that it would be necessary to know the value of the land, and the grades, and that sort of thing, which is on each road.

Q. Why the value of the land?

A. If you go through a city where you pay \$300 a foot for land, of course you have a greater outlay than through a country place, where the people are willing to give the land.

Q. My inquiry is merely as to the actual running expenses, as to the actual expenditure necessary for the operations of moving freight along the road?

A. There should not be any difference at all, where there is no difference in grades, or cost of fuel, or the costs of operators.

Q. Therefore it is that I repeat my question. Taking this list of roads as you know them, what, in your belief, is the difference in actual cost of moving freight between a road, and I wish you would name it, which has the hardest grade and alignment, and that road whose situation is such that it can move cheapest. What is that difference, and which are the two roads, illustrating the difference?

A. I don't know that I could give you that. I think the Boston and Albany road cost more money per ton per mile than any other.

Q. That is, from grade?

A. From grade; yes, sir.

Q. How much more does the Boston and Albany Railroad than the New York Central?

A. That I don't know, sir.

Q. Have you no opinion about it?

A. I should think not less than 10 per cent. and may be more. Of course, they have to haul a much less number of cars, owing to up-grade, than they would if it was level, and each train requires about the same amount of men and an engine. Therefore, the greater their grades, of course, the more their expenses.

Q. But they sink this difference in the general benefits they derive from this co-operative sending of cars by the Blue Line?

A. Yes, sir; it is their misfortune to have the heavy grades.

By Mr. SHERMAN:

Q. You are a very intelligent gentleman about this matter, and I wish to get at the elements of the cost of transportation. Take the distance between Chicago and New York and take the lines which you are familiar with, the New York Central and Lake Shore Line, and the Pennsylvania Central and Pittsburgh and Fort Wayne Lines. Take these two, a distance of about a thousand miles, excluding now the capital invested in the roads, the interest, &c., and taking the actual cost of moving by the ton or bushel, whichever is most convenient to you; tell the committee what is the actual net cost upon those two lines of railroad, as constructed.

A. That is, taking the business as it now is?

Q. Yes, sir; as it is this year. It is developing and increasing, as a matter of course. What would be the lowest rate per ton per mile?

A. In order to get at that, the committee would have to take into consideration the cost of hauling a very large number of empty cars back again to get another load.

Q. Take that into view, because that is a part of the cost.

A. It is; but if the tonnage could be so equalized as that a return freight could be had, so that instead of moving a large proportion of these cars one way loaded and back empty for another load, really hauling two miles for one earning, that would reduce the cost very much.

Q. I want the actual cost per ton per mile, taking the average of the year.

A. Do you mean outside of a fair outlay for the road?

Q. Leave out all interest on bonds and dividends to stockholders, and give the actual net cost of transporting a ton of merchandise from New York to Chicago by either route, whichever you are the most familiar with. Give first the actual cost, including the pay of the fuel and all the necessary expenses of moving the trains?

A. I went into that one time on the Michigan Central Road, when I was the assistant superintendent there, and I think it was about three-fourths of a cent a ton a mile.

By Mr. CONKLING:

Q. Did that include the maintenance of the road?

A. No, sir.

Q. I mean in track-repairs, &c.?

A. No, sir; I am going to make a little explanation of that. And that was another reason why these through lines were a matter of necessity. At that time we had to handle the property at the terminus of each line, find storage-room, take the property out and deliver to the next company. They had to do the same thing; it had to be checked over three or four sets of roads; and all that our present system of through-cars has wiped out.

I think if you can go still further, and unite the interests of the railroads more closely, even without consolidation, under the form of a clearing-house plan, by which the whole of this clerical labor at this point would be done away with, and each road receive a clearing-house certificate for its proportion of the line-earnings, so that there would be no handling, and no clerical labor at these terminal points, and the trains run uniformly, I think that could be reduced, probably, to five-eighths of a cent a ton a mile.

By Mr. SHERMAN:

Q. Now, let us go on one step further and give us the other elements. What amount per ton per mile would, in your judgment, pay the interests of the cost of railroads built along the lines of either of these two routes which I have mentioned. In other words, what would pay for the capital employed in building a line of railroad similar to either of these two great lines. As a matter of course that includes the maintenance of the road?

A. There is such a great variety of cost to the road that you would have to equalize the whole thing. For instance, ten miles from here out would cost as much as one hundred and fifty miles beyond Albany.

Q. But what would it cost to build either of these lines of railroad; about a thousand miles long?

A. Put into single tracks?

Q. Such a road as there is now. What would duplicate either the New York Central or the Pennsylvania Central lines. As near as you can get at it?

A. That, of course, would have to cover its equipment?

Q. Yes, sir.

A. The magnitude of the business, of course, increases the cost of equipment very much.

Q. Take the present business of either road and state what, in your judgment, per ton, per mile would compensate for the capital employed. I want to get at the actual cost of freight?

A. The right way to get at that would be, of course, to find the cost

of the road and put that over the number of tons moved a year. The New York Central can move 4,300,000 tons a year with its two tracks, and can move 6,000,000 tons a year with its four tracks. The cost of those four tracks and its equipment for freight, would have to be taken into account at its actual cost, together with the actual cost of the equipments necessary to move 6,000,000 tons a year; and you put a fair interest after paying cost of maintaining that, over the 6,000,000 of tons, and it would give net cost. For instance, suppose a single track: the track alone costs \$25,000 a mile, and its equipments and station-buildings and that sort of thing \$25,000 more; there would be your four tracks and equipment, \$200,000 a mile, and put that over the four hundred and fifty miles from here to Buffalo, and distribute that over 6,000,000 of tons of freight, you would have it at once.

Q. Take your own mode of computation and state what would be a fair return for the capital employed.

A. In our figuring of the thing, we think when we get below a cent a ton per mile on the average for the year, we have got then so that the business is not worth carrying.

Q. Then you say a cent a ton a mile is the minimum at which railroads, according to their present development, can carry heavy freight from Chicago to New York?

A. Yes, sir. Of course these things differ as you strike the different tonnage and cost of the roads; but taking the general average, when you get below a cent a ton, we think we have got where the business is not worth having.

Q. What is the cost of running the New York Central? How much percentage is expended in running expenses; how much percentage is their gross receipts?

A. I think their running expenses would be about 65 per cent.

Q. About two-thirds?

A. Yes, sir.

By the CHAIRMAN:

Q. Are you not carrying wheat now for less than a cent a ton a mile?

A. Yes, sir.

Q. Are you carrying it at a loss?

A. Yes, sir; when business is light.

Q. Do you mean to say that the rates fixed on all these roads, 45 cents a hundred between Chicago and New York, is an actual loss to the companies?

A. It perhaps becomes necessary to make some little explanation. I have been asked that question once before. In the movement of property over lines of roads, it has to be in the charge of competent men. Take, for instance, from the 1st of May until middle of August, at the opening of navigation; the force of men to operate a road with the increased business, when the canal and lake navigation is closed, is double, probably, what it would be during the summer-months. Therefore these men, being mostly poor men, must have employment during the dull time. No road can afford to let these tried men go from them to find business for the dull season. Therefore, if they can keep those men employed through the summer, and actually lose money upon the business that they are doing, instead of undertaking to put new men that know nothing of the road, or its running regulations, or anything of that kind, on during the busy season, they had better earn enough to pay part of their expenses, and keep those men for the balance of the time, when the roads earn more by their increased business, than to let

them go. If they do a business that actually is a loss to them for that season, it is not so great a loss as it would be to take on new men, who would be likely to smash up trains and engines, and that sort of thing, during the busy season. Therefore it is profitable, as you may say, to retain those men, making a loss on the business, rather than to have them go somewhere else, and take up new men to do your increased business.

Q. Does not the present tariff of 45 cents a hundred more than pay the expenses of running, and the expenses of the men employed that you speak of?

A. It might pay a very little more; not a great deal. The interest on the road goes on just the same in dull times as any other. The present tariff is 50 cents. It was raised day before yesterday.

Q. It was during the summer, 45?

A. Yes, sir.

Q. About \$10 a ton now, then?

A. Yes, sir; at the present time.

By Mr. SHERMAN:

Q. I would like to ask you one more question. You have given us your idea of the cost of transporting freight on the present great lines of road. You know all about the various plans of building new railroads—steel rails, double tracks, low grades, &c.?

A. Yes, sir; I know they are talked about.

Q. According to your idea of what a railroad could be built at, at what rate could any railroad between Chicago and New York transport heavy freight from Chicago to New York?

A. When you go into steel rails, of course, you increase the expenditure.

Q. I want to get your estimate of the limit to which, with our present lights, the cost of railroad transportation can be reduced?

A. Saying nothing about the interest of the cost?

Q. I want the interest of the cost included in that estimate.

A. That depends very much upon the amount of business.

Q. But you know the business?

A. Yes, sir. For instance, the interest on your road costs as much if you don't run but one train a day over it, as if you ran a train every quarter of an hour.

Q. But take the two great cities as an illustration?

A. By running a train every half hour on a grade where you could run, say thirty to thirty-five cars, you might possibly reduce that to $\frac{3}{4}$ cents a ton a mile; that is, by taking that amount of business. The increased business diminishes the cost per ton upon your expenditure for road-way very rapidly. As I said before, if you have but one train per day over that road, which could take a train every half hour, your interest upon the iron on the road is precisely the same as if you did go every half hour, although the iron would wear out a little sooner. But the increased receipts of a road that could move a train every half hour would be very much more than the increased expenditure on a road that only ran one or two trains a day.

Q. Suppose the New York Central runs about a train an hour?

A. If they could unload here, they could run one every half hour. I think they do run more than a train every hour.

By Mr. CONKLING:

Q. What is the rate of speed for freight trains over these various railways traversed by the Blue Line?

A. Trains through from here to Chicago, if they make their proper connections, go through in eighty-four hours, allowing ample time for inspection of cars and the transfers, and taking the car numbers at the different terminal points.

Q. That is, what distance an hour, actual running-time? How many miles an hour of actual running-time, deducting stops?

A. That would be about eight miles an hour of average time; a little over that.

By the CHAIRMAN:

Q. Including stops?

A. Including stops.

By Mr. CONKLING:

Q. I say actual running-time, *deducting* stops?

A. That would be probably about twelve miles an hour.

Q. Assuming that the road was clear to freight and unoccupied by passenger trains, is twelve miles an hour a profitable rate at which to run freight trains?

A. I think so.

Q. You do not think it would be desirable as a matter of economy to run them faster than that, if you occupied the whole road with freight?

A. No, sir. Actual time, including stops.

Q. Is your present answer true as well of a railway made of Bessemer-steel rails, and especially adapted, if it could be to freight?

A. When you get beyond twelve miles an hour, you increase your cost of running.

Q. And that would be true of a road adapted to freight as far as it could be?

A. Yes, sir.

Q. Now running at the rate of twelve miles an hour, actual running-time, how fast could you follow one train by another on a freight-road—a road on which no passenger trains run?

A. They should not be followed any nearer than fifteen minutes.

Q. They ought to be a quarter of an hour apart?

A. Yes, sir; but there would be no such necessity as that, because at the destination you could not handle the property. The trains would block up the terminal stations.

Q. Let us have your view of that. Suppose you had terminal facilities like those in Detroit, enabling you to unload these cars in four minutes, and with facilities enough to enable you to unload a train of cars at once?

A. That applies only to grain, while a very large proportion of our freight is not grain. For instance, we are bringing large quantities of lumber here, you cannot unload a car of lumber in an hour.

Q. How with a car of live-stock?

A. They could be unloaded readily.

Q. They get in and out themselves?

A. Yes, sir, the live ones; occasionally a dead one has to be drawn out.

Q. Speaking of grain and live-stock you could unload very rapidly?

A. Yes, sir; with proper facilities for doing it.

Q. The same thing is true of coal, is it not?

A. Yes, sir.

Q. Is there any exception save lumber?

A. Flour. That would take longer to take care of.

Q. Flour in barrels?

A. Yes, sir; it would take about twenty minutes to unload a car of flour, if you had proper facilities to do it.

Q. So that taking miscellaneous freight, including safety in running, your judgment is that one freight train could not properly follow another with less than fifteen minutes between?

A. Yes, sir; but when you get to the destination, it would be utterly impossible to handle the property, one freight train coming so quickly after another.

Q. But your judgment is that the maximum of rapid succession of trains would be fifteen minutes apart?

A. Yes, sir; and even then each train would have to keep on time to do that, or else you would get nearer together.

Q. I understand, then, the result of your answer to be that the difficulty of unloading trains, disposing of their freight at the terminus, and considerations of safety in moving trains on the track, taken together, indicate fifteen minutes as the shortest space of time that should intervene between following trains?

A. What I mean to say is, that no train should follow closer to another train than fifteen minutes behind it.

Q. You say that, for the double reason of safety in running the train and managing them on the track, and also considerations of managing and handling the freight at the terminus?

A. I say that cannot be done and handle the freight at the terminus, and furthermore that it is utterly impossible to keep that number of trains all on time and keep them fifteen minutes apart. But suppose one train has a hot journal, and has to stop fifteen minutes, the next train comes behind it close, there would be a gap of thirty minutes between the train that stopped and the one that went ahead of it, while you would have two trains together. These trains moving up to make up these fifteen minutes again would have to run at a greater increased speed while the next train, before it started, would have another one upon it again. So that it would be utterly impossible to run trains within fifteen minutes of each other because of the difficulties that would be likely to occur in the movement of trains. And when you got to the destination, you could not handle the freight.

Q. Let me separate my question. Do you mean that you can run trains regardless of discharging freight within fifteen minutes of each other?

A. If they can all be kept on time.

Q. If you please, do not put in exceptions. I am talking of practical questions. I now ask you whether, with a railroad in proper order, you can or cannot run freight-trains following each other within fifteen minutes?

A. You can.

Q. And you can do that properly and safely?

A. There is no difficulty about that if the men who run those trains are up to the rules and abide by them, keeping "on time."

Q. Well, with the men running the trains did not know how to run them they could not run them fifteen minutes apart with safety. Now, do you mean, also, that you can or cannot discharge a train with proper terminal facilities once in fifteen minutes, taking the average of freight. You say it would take twenty minutes to unload flour in barrels, it would take a very short time to unload grain; live stock gets in and out itself. Taking the average of freight which comes from Chicago to New York, do you answer that fifteen minutes would or would not, with proper facilities, enable you to discharge and load freight?

A. It would not.

Q. What is the time necessary?

A. I do not think it could be done in less than half an hour.

Q. Then you say that that would measure practically the useful frequency of trains; that they ought to be thirty minutes apart in order to adjust themselves to those necessities?

A. Yes, sir.

Q. Now, one thing more, speaking of the distance between Chicago and New York, how many cars could an engine draw at a fair rate of speed, twelve miles an hour?

A. When the track was clear and the weather dry, the rail in good order, they could haul about an average of thirty cars to a train.

Q. Thirty loaded cars?

A. Yes, sir.

Q. And the number would fall how much below that in the ordinary vicissitudes of winter and summer.

A. There are times when we cannot haul over ten. It depends a good deal upon circumstances.

Q. That is unusual.

A. No, sir; there are a great many days in the winter when we did not haul over ten. That is at the time when the snow is upon the track and then there is a certain state of the atmosphere when it is impossible to make steam. With the same engine you cannot haul the same number of cars two different days, when there is a difference in the atmosphere by which steam cannot be generated as well on the one day as the other.

Q. Taking the difference together, winter and summer months, what is the average power of the engine?

A. I do not think we average over twenty to twenty-five cars.

Q. So that twenty or twenty-five loaded cars in the unfavorable season is the average, and as high as thirty in the favorable season?

A. Yes, sir; probably from twenty to twenty-five. That is taking the average of what we call the fall, winter and spring months, as against thirty to thirty-five cars during the average of summer months. Of course, a great deal depends on the engines. Some will haul a great deal more than others, but we average that with good facilities and good freight engines.

By Mr. DAVIS:

Q. I would like to know the difference in the tariff between summer and winter. What per cent. is usually made?

A. Our lowest in summer, I think, has been 40 cents from Chicago to New York, our highest in winter, when the summer rate was 40, would be up to 65.

Q. The lowest you have ever had has been 40 and the highest 65?

A. The lowest published tariff, I think, from Chicago has been 40 cents, and of course as we go back in years we go back to 70 cents; but taking for the last two or three years, I think we have been as low as 40 cents and 65. The highest in winter, for the last two or three years, I think, has been 65 cents from Chicago.

Q. I see, then, for three years the lowest has been that rate?

A. Yes, sir; I do not just now remember, but I think that is it.

By Mr. SHERMAN:

Q. Did you in the winter of 1868 charge 52 cents a bushel for wheat from Chicago?

A. We might in that year have got 45. I think that year our highest rate was 75; I am not positive of that.

Q. Our table then must be wrong in that particular. There is a table which shows the rate on a bushel of wheat. You think that is an error as to that year?

A. I think so. It would be from the middle of January to the middle of February. That table is for '67 and '68. I think very likely we did do it for 53 at that time, because that was just the commencement of the through-line. That commenced on the 1st day of January, 1867, and the cars were then somewhat limited in number and it is possible that rate might have, charged. You will notice, also, that it was only for a short time, on the 1st of February, a drop was made.

By Mr. CONKLING:

Q. I understand your statement that freight trains should follow each other with a half hour between, to be governed chiefly by the difficulty of discharging those trains at the terminus in less than thirty minutes?

A. Yes, sir; and the difficulty of moving trains on time while on the track.

Q. Well, now, you do not mean that you want thirty minutes between trains as a mere question of moving trains, if they run twelve miles an hour?

A. I think so, if you take into account the possibility and the very great probability of all trains not keeping upon their time-table schedule, deducting stops, would give running time more than twelve miles when in motion.

Q. I thought we had passed from that, but I will return to it. Do you mean or do you not, that thirty minutes interval between trains with decent railway management is necessary in respect to the safety of moving those trains twelve miles an hour?

A. I put that on the movement alone at fifteen minutes.

Q. So I thought, and assumed that in my question.

A. Yes, sir, but we return to the other question, of their probability of not all keeping on time, and including stoppage and the necessity of time to handle the property at its destination would bring that out to thirty minutes.

Q. So I assumed in my question, but you corrected me. Am I right then in supposing that you fix thirty minutes, owing chiefly to the necessity of time in unloading the trains?

A. And the probability that it would be impossible to keep all the trains upon schedule time of twelve miles an hour *running time*, exclusive of stoppages.

Q. Well, we will have to separate that. Now I will go back. On a railroad devoted exclusively to freight trains, proceeding at the rate of twelve miles an hour, what is the necessary interval between trains, regardless of unloading them?

A. Fifteen minutes.

Q. Could you not run them much closer than that in point of fact with safety?

A. No, sir.

Q. In truth, do not many roads which you know run trains closer than that?

A. I don't know any roads that do, unless it is just in starting out, or something of that sort.

Q. Then, confining it to the movement of trains alone, fifteen minutes would do. Now you gauge the time to thirty minutes, owing, if I under-

stand you, to the need of time in discharging the trains at the terminus?

A. Yes, sir, and the necessary stoppage time.

Q. Then I ask you, suppose at the terminus you had switches and turn-outs running to different store-houses, elevators, barges, wharves, and so on, enabling you to unload different sections of the trains simultaneously; that would diminish, would it not, of course, the time of discharging trains?

A. That would, provided you had in each train its particular class of freight already separated to go upon those tracks; but if you have a mixed train, as a car of grain, next a car of lumber, and the next a car of flour, there you would have to make two switches in order to place that in a proper train to take its proper track for unloading.

Q. But the live-stock cars would not have to wait for the lumber-cars to unload?

A. Not if they came down in a live-stock train, and nothing else in that train.

Q. Suppose they did not, suppose they came in a mixed train, five cars of live stock, and five of lumber, and five of grain, could not you break up your train so as to run your five lumber-cars to the lumber-yard, and your live-stock cars to the cattle-yard, and your grain-cars to the elevator?

A. You would have to take time then to break it up. You have got to have time to put each proportion of the train on the proper track.

Q. There would be no difficulty in making up the train and putting these three sets of cars next each other when you started?

A. But you take it from different points, and take it on as you go along.

Q. Would it take any more time to take out with the engine besides its tender, say three cars, and run back and have the car taken on midway of the train, than to cut the engine off alone, and put it in advance of the other car?

A. It would take no more time; it would take very much more power, and would not be so easily coupled.

Q. That is a pretty small quantity, though, is it not, considering the short distance?

A. Yes, sir; but this separation of trains would have to be made outside of the terminus, at some point, for instance, like Albany. When the property comes down over the New York Central Road it matters not to them whether that property is going to Boston, or to Saratoga, or New York, or whether it is Albany proper; they hitch on to it; it goes over their entire road. But when it gets to Albany it will not do for them to haul the Boston freight down here. It has to be separated from the train so that the Boston and Albany Road can take it on. And when you get to Springfield you have the same difficulty again. All the property going up the Connecticut River Road, or down the Hartford Road, would have to be separated from the freight going on beyond. Therefore they would have to have tracks and room and time allotted to them to separate this freight again, to take its proper road for its proper destination. Then when you come into New York, the cattle-yard here in one place, elevator in another, flour, storage at another point, and that has to be separated again, all of which takes time, even if you have the track room to separate, unless the trains are made up with each particular kind of property before you reach the city.

Then, in handling grain, there would be the same difficulty. It would be utterly impossible to handle the grain in that manner with the speed

of which we have been talking, unless that grain was inspected, so that the grade of each could go into a bin by itself, and the cars so arranged that they could be discharged at once, and the receiver of the property would take his receipt, for instance, for so many bushels of No. 2 Chicago wheat. When he sent his receipt there he would receive his No. 2 Chicago wheat without any regard to whether that was the identical wheat that started for him or not. If you have to give him the identical wheat, it would be utterly impossible to do that. It is that system of inspection that is involved. Then you bring in a train here with, may be, all No. 2 Chicago wheat, and all inspected No. 2, and a full train-load goes into warehouses, that could be unloaded without any difficulty at all. But suppose you have twenty cars No. 2 spring-wheat on the train, and next No. 1 white Michigan wheat, and the next is amber, there are two switches to be made in order to place those cars in position to be discharged at all into their proper receptacle for each grade of grain. That takes time. Therefore, to make these switches to get property so separated that it can be discharged, a half hour would be as little as possible.

Q. Therefore, with any kind of facilities that you know of, you could move trains faster than you could discharge them?

A. Yes, sir; we can always do that.

By Mr. SHERMAN:

Q. Is not that practically so, with the exception of New York, that they have an arrangement for sorting these trains, say Philadelphia and Baltimore, and by a well-conducted system of railroad in New York ought they not to sort all these trains some distance from New York?

A. But it makes no difference where; you have to take time.

Q. But with sufficient side-tracking?

A. You cannot make a switch, if you have a hundred side-tracks, but in a certain time. If these were so distributed, you might take a train of twenty-five cars and so distribute the freight through that it could not be switched in an hour.

Q. But are you not aware that both in Philadelphia and Baltimore they not only let trains in five minutes apart, but sort them and arrange them before they get in?

A. That is only where they are simply starting out or coming in. You take twelve miles an hour, and you run trains within fifteen minutes of each other and the wheel breaks. Before that train can be stopped, even supposing it does not go off the track, occupies the time of the train's men—the conductor, brakemen, and everybody else. There the first thing is to stop that train to prevent disaster. Suppose that occupies three minutes. Next they should go back a distance of not less than three hundred yards with their signals to stop the approaching train. Take the three minutes allowed to stop a train and get their danger-signals, flag or light, supposing it is perfectly handy, they have to go from the train and brakes back three hundred yards, and by the time they get back, and the men have time to set the brakes on the approaching train, the whole fifteen minutes are exhausted, or nearly so—near enough for safety.

Q. When you speak of trains you mean each engine, whether they are in sections or in trains?

A. Yes, sir; sometimes heavy trains will have two locomotives.

Q. But they sometimes go out convoys; you call each one a train?

A. Yes, sir; and each one has a set of men.

By the CHAIRMAN:

Q. What do you estimate the present capacity of your road for moving trains eastward? How many trains can you move a day eastward over the New York Central double track; I mean under the present system, including passenger-trains. What is the ultimate capacity of the road for moving trains eastward?

A. I think they move trains about every three-quarters of an hour; I am not positive about that.

Q. About what proportion of the time are those freight-trains standing on the side tracks waiting the passage of express, or other trains?

A. That point requires, perhaps, some little explanation. You know that on all roads, within certain distances, the wheels, axles, and cars have to be inspected to see that there are no cracked wheels, no loose bolts, &c., which are liable to get out and cause disaster. These trains will go in upon side tracks, perhaps at Rochester; while this inspection is going on the passenger-trains are passing, and the inspection will occupy as much time, perhaps, as the passenger-trains occupy in passing them. Therefore, where there is, apparently, some delay for the passenger-trains to go by, it is no longer a delay than would have to be had on any road entirely for freight to do this inspection, provided the passenger-trains are so arranged that they can pass while these inspections are going on.

Q. You think that a freight-road, built exclusively for freight-purposes, would have very little greater capacity than the present system?

A. They would have to occupy nearly as much time to inspect the cars, wheels, axles, and running-gear of cars if it was exclusively for freight as would be occupied in the passenger-trains passing them, provided the time-table could be so arranged that the passenger-trains could pass while this inspection was going on.

Q. Is it so arranged now on the road?

A. I think it is; I am not positive. The inspection takes place at Rochester, Syracuse, Utica, and West Albany. There are four sets of inspection between Albany and Buffalo, and one at Buffalo, making five during those three hundred miles, and I think that they are so arranged that when they stand upon the side track and the passenger-trains have passed them, going west, then the freight-trains follow. Well, when they follow, they keep, perhaps, within five minutes of each other, or even closer, until they pass the limits of the city, and then the head train keeps increasing its speed until they are a proper distance apart. Then, before the next passenger-train gets up to cover them, they have got to the next inspection-point.

Q. How many trains a day in the busy season of the year do you move eastward over your road; what is the maximum number?

A. That I do not know; I have not the time-table with me at present, I think the amount was somewhere near 4,000,000 of tons for the year 1872, but I am not positive about that.

Q. Do you charge any higher rate for carrying fourth-class freights over your lines than through other cars?

A. No, sir.

Q. The same freight?

A. Yes sir; that is the point that I forget to mention. The line cars are simply for the purpose of facilitating the business at the same rates charged in cars—without the handling at each terminal point.

Q. If a car loaded in Iowa or Minnesota passes to New York, does not the shipper save the Chicago expense?

A. Yes, sir; if loaded with grain the car goes to his warehouse, receives the property, goes clear of Chicago elevators entirely, and goes to any farmer or dealer that he sees fit to send it to in New England, if he chooses to do it.

Q. Who pays for loading and unloading your lines, the company or the shipper?

A. The company. There are some points in the West where parties own their warehouses and handle their own property; but there is nothing allowed them for doing it.

Q. In speaking of the freight-lines, did you include any except those over which you have control—the "Blue Line"?

A. When I speak of those lines I speak of all co-operative freight-lines that run over the New York Central Road; and those are the only lines I have personally a knowledge of.

Q. Those co-operative lines you say are owned by the stockholders of the company, or by the company itself?

A. By the company itself.

Q. There is no distinction in any way between the ownership of these lines and the ownership of the other property of the road?

A. None at all.

Q. What do you mean by co-operative, as distinguished from other freight-lines?

A. For instance, when the property is loaded into the New York Central car to go through to Chicago, in what we call a common car, it would go to Suspension Bridge, and there be handled and go into a Great Western car, requiring two sets of check-clerks, and the handling from the one car into the warehouse, and from the warehouse over to the other company's car, and the same at Detroit.

Q. I did not make myself understood. There are several kinds of freight-lines—the co-operative and, as I understand it, the non-co-operative; is that the proper term?

A. I do not know of the non-co-operative.

Q. Not upon your road?

A. No, sir.

Q. There are no freight lines on your road except the co-operative, which you have described?

A. No, sir; none that I am aware of—that is, on the eastward bound. The "Merchants' Dispatch" is about the same thing. They are a co-operative line, in effect, although different from the "Blue Line."

Q. Is the "Merchants' Dispatch Line" owned entirely by the New York Central Company, or are there other outside parties interested in it?

A. That I do not know; I know nothing of their present organization beyond the fact that they went once a month to audit accounts with the roads over which they run.

Q. Do all of those roads furnish cars in proportion to the length of the road?

A. They are supposed to furnish cars in proportion to the mileage and the length of time they are occupied to do the business upon their roads. You will see at once that the New York Central Road, being a middle line, where all the roads branching from it through to the Western States would go down and come up on, that their mileage, per mile of road, would be, perhaps, four or five times the mileage on the same length of road upon a road that branches out from them; and sometimes fifteen times as much time is required to make one mile on short

hauls, to load a car from teams, and get it back to the main line, ready for New York Central to haul it over their road.

Q. Do all of those lines hire cars from companies that furnish cars for hire—any of the roads in your line?

A. I think not, as a line. Roads may hire their quota of cars for line-service, or get them in any way that suits them.

Q. There are certain companies, you know, who manufacture cars and hire them to certain people?

A. Yes, sir; but we are not supposed to know how the roads in the line get their quota of cars.

Q. I asked you that question with a view of asking what they paid a mile for the use of those cars.

A. The mileage-balances, as I explained to you before, are settled upon the clearing-house principle, at the rate of a cent and a half for a mile for the balance; but if one road makes a mile and another road makes a mile with its car over each other's roads there is no balance; but if one company's car makes three and another company's car two miles, there is a cent and a half going from one company to the other for the use of the car upon that balance. The one mile balances the other mile; but if he has anything beyond that, then it is a cent and a half for each surplus mile.

Q. You say the price of freights is fixed at Chicago; who appoints the men who fix the freights?

A. Each company has a general freight agent, and they, by consultation, make a freight tariff from Chicago to all competing points East.

Q. The railroads of the West appoint agents, then, for the freight bound eastward?

A. Each company has a general freight agent.

Q. And those agents meet together and fix the freights?

A. Yes, sir.

Q. Have they absolute power over that?

A. Yes, sir.

Q. Do they consult the companies with reference to fixing that freight, or is that whole matter referred to them without consultation?

A. The general freight agents have the matter in charge and they get together and find what competition they have to work against and fix the tariff according to circumstances.

Q. And the same thing is true at the East. Each company appoints its agents?

A. Yes, sir. That is, each company centering in Chicago. The point I called your attention to before was the companies centering in Chicago. They make that rate while the New York Central, Boston and Albany, or the Great Western have no voice in it whatever.

Q. How does it happen, then, that you sometimes fall out and run each other on freights? Is it because those agents cannot agree? Sometimes the roads cut each other on freight.

A. Each set of roads is anxious to do all the business that they can.

Q. Then at such times there is no agreement among those agents?

A. There is an agreement and a tariff rate is issued. When they are doing business at a less rate, then they are doing it without authority at all, and the roads are not bound to accept their proportion of a cut rate unless they see fit to do so. But a published tariff that is made without consultation of eastern roads at all, that published tariff is carried out without consulting the eastern roads upon the subject.

Q. You made a statement a while ago with reference to the capacity

of the canals, which differed very much from my information upon that point. I would like to ask you a question about it. I understood you to state that the capacity of the Erie Canal was about 11,000,000 per annum?

A. Yes, sir; it is estimated that there are about 7,000 boats, with an average tonnage of 250 tons, each making one round trip in 30 days, for 200 days.

Q. Is that not on all canals of New York?

A. That would be on all the canals of New York. Outside of the Erie Canal there is very little, if you recollect. And while there was no apparent increase in the canal capacity itself, there is nearly a double capacity owing to the smaller size boats having passed out of existence and larger size boats having taken their place. The capacity, as you will observe, is doubled in the size of the boats with the same number of boats.

Q. We have a report made some two or three years ago to the New York State Convention, in which they estimate the ultimate capacity of the Erie Canal at ninety boats each way per day, which amounts to a little over 4,000,000 of tons per annum as its capacity for moving eastward-bound freight. I called your attention to that to know how the difference of opinion arose.

A. It takes just as long to lock a boat through to carry seventy-five tons as one carrying two hundred and fifty tons, provided the lock capacity is suitable for it, so that the same number of boats as I have explained to you, passing in the same time, would take twice as much property as they would at that time, owing to the difference in the size of the boats.

Q. This estimate was placed upon boats of 210 tons, which seems to be the practical capacity; multiplied by 90 for 220 days, gave 4,000,000 tons, according to my recollection.

A. But you take ninety boats for that length of time per day, and you will see that there are a great many more boats than that.

Q. There may be more boats on the various canals, but ninety boats they estimate as the capacity for passing a single lock in a day.

A. But you understand that the locks are double and can be increased in size.

Q. But they say that ninety boats are all that can pass either way, for the ultimate capacity one hundred, and they estimate the practical capacity at ninety.

A. That is a mistake, because during the busy season, unless they did more than that, they never would carry the tons they have already done. That would disprove them at once.

Q. I understood you to say that the capacity of all the roads moving freight eastward would be about 30,000 tons a day?

A. Moving to the sea-board at the different points.

Q. What roads do you include in that estimate?

A. Roads passing to New Orleans, and to Baltimore, Philadelphia, New York, Boston, Portland, and Montreal.

Q. Then you include all the roads leading in any direction from the interior to the sea-board?

A. Yes, sir, from the grain-producing country.

Q. Thirty thousand tons per day is the ultimate capacity, is it?

A. Yes, sir. The southern roads do not reach our grain-producing country.

Q. What is your judgment as to the relative economy of water and rail transportation, taking the existing water-lines; I mean the Erie

Canal, and the lakes, and the leading railroads to the East? Which can carry cheapest, and how much? In other words, can you compete with water?

A. We perhaps cannot compete with them where the property has to be moved in very large quantities.

Q. I mean fourth-class heavy freight, such as grain?

A. For such articles as corn and grain, which has to be moved in quantities of eight or ten thousand bushels at a time to one consignee, it would be cheaper for him probably to move that property by water, if it was going to a point that could be reached by water; but the necessity of the business is such that each to come from the producer to the consumer, they do not require it in such quantities. Therefore he, in order to do his business upon a small capital and receive his car at the place of production, or near it, and send it to the place of consumption, can do that on a very small capital, as compared with the amount that he would have to pay in taking large quantities and sending it into store and letting it accumulate there until he gets a quantity sufficient for a vessel-load. The interest of his money is going on, and his insurance and storage are going on; and then his water-communication, while it is cheaper than rail, to a certain extent in these large quantities, when he gets it to his destination, there is the elevator charging again, and his insurance upon a large quantity, and the prospect or chance of a fall in the market. All that makes it larger in the end if he requires this property for consumption, and only requires a certain quantity a day. He makes money in the end by sending it by rail in quantities as he wants to consume it, more than he would to send in those large quantities, with the accumulation of charges, interest, and that sort of thing upon it, and receiving it and holding it in large quantities until he consumes it.

Q. Looking to the general consideration of the great cereal crops of the West, and assuming the improved water-lines, so that vessels, say, carrying 750 tons, might pass through the Erie or Oswego Canal, or by Lake Champlain, do you think it possible for railroads to be improved in any way so that they could compete with them in economy?

A. I do not, sir; not where it has to be moved in those large quantities for foreign shipment, but for consumption they can.

Q. By how much would you fail to compete with them in the actual carrying charges, leaving out the question of time and other considerations that you mention?

A. The rail ought to get at least 25 per cent. more.

Q. How do you bring your wheat, corn, and other grains from Albany to New York and pass over the New York Central Railroad; how is it brought from Albany?

A. It is brought from Athens in barges.

Q. Where is that point?

A. It is a point on the river below Albany.

Q. Why do you unload your cars there instead of carrying them through to New York?

A. To get the additional facilities for handling the cars that we cannot handle in New York.

Q. Is it not also because it is cheaper to take the water wherever you strike it?

A. That may be one consideration. I do not know as to that.

By Mr. CONKLING:

Q. Do they use the cut-off now which connected it with Athens?

A. Yes, sir.

Q. Explain that to the committee, if you please.

A. As I said before, with regard to the difficulties of terminal points, handling large quantities of cars in a given time in a place like New York, the impossibility of doing that upon so limited a space of ground as they would have to, and property then having to go into a barge here after you had gone through with the difficulties of handling it here, are brought down to Athens, where they can handle it with these increased facilities; it goes into a barge and comes from there down here, and is delivered perhaps within a very short time.

Q. Brought down to Athens by Albany or Greenbush, or directly from Schenectady to Athens?

A. From Schenectady to Athens.

Q. By a cut-off?

A. Yes, sir; by a cut-off. There is a cut-off at Schenectady.

By Mr. DAVIS:

Q. I see you are familiar with the moving of trains. I was unable to agree with your conclusions with Mr. Conkling, and I wondered whether you had had actual charge of the running of trains on a road.

A. I have had charge of the running of trains.

Q. How long since?

A. I had charge of the Michigan Central Road in 1865.

Q. The running and moving of trains came under your supervision?

A. Yes, sir; and three years before that I moved trains on other roads.

Mr. SHERMAN. Mr. Davis says that the trains on the Baltimore and Ohio Road are discharged sometimes, and very often, as frequently as once in five minutes.

Mr. DAVIS. Convoys are run five minutes apart.

Mr. HAYES. You do not mean that they discharge their freight and move off in five minutes?

Mr. DAVIS. I mean that convoys of trains, say of ten trains, pass a given point within an hour, and that they receive them in that way at the ends of their roads, and start them in that way.

Mr. HAYES. Yes, but they are not kept that way while they are on the road.

Mr. DAVIS. Certainly, convoys every five minutes are allowed to run.

Mr. SHERMAN. They are coal-trains.

Mr. DAVIS. They are all, except passenger-trains.

Mr. HAYES. I would not want to be engineer or brakeman on a road of that kind.

Mr. DAVIS. Why not?

Mr. HAYES. Simply because in case of an accident other trains come into you. It is utterly impossible to flag trains and prevent an accident where the trains run within five minutes of each other.

Mr. DAVIS. Some very good railroad-men differ with you on that—some men who have been successful in managing roads.

Mr. HAYES. But you would have to send a flag back some three hundred yards.

Mr. DAVIS. That depends altogether on circumstances, sir. Sometimes one hundred yards, and sometimes none if you have a tangent.

If you have an up-grade you are running in sight of one another, and it makes no difference. If you have a down-grade, of course you are right. By the regulations of some roads managed pretty well in con-

voys, they are allowed to go within five minutes of each other ; and they run them in that way by turn-outs, formed in the shape of a Y, at the ends of the road. At Lukes Point I suppose they receive ten trains within an hour frequently.

Mr. HAYES. But they do not receive ten trains the next hour.

Mr. DAVIS. But there is no reason they could not if they had sufficient turn-outs.

Mr. HAYES. What would they do with the property ?

Mr. DAVIS. They unload it. They could have a hundred turn-outs if they wanted it, as well as two, if they had the ground. But supposing that we approach a point within a mile or five miles of our terminus, and there we had ten or twenty turn-outs—one for live stock, one for grain, and another for coal, and so on. The cars come there regulated. The switchmen turn them on either track. To a great extent they are sorted before they arrive there. For instance, grain may come on one turn-out or switch, and a coal-train on to another. Some of them have coal-convoys and some of them have miscellaneous ones. Now, half an hour for each train would limit a double road to a very small capacity in a day. Under your rule but forty-eight trains could be received a day, and that would be very small.

Mr. HAYES. But suppose, for instance, you have twelve trains, one every five minutes. Suppose you had just capacity for those twelve trains. You have twelve turn-outs. They must be all for the very same grade of property, and they must go to the discharging-point for that property without any switching at all. When they get to that point can they discharge those twelve trains and let twelve more in within the next hour to discharge, and do it through the twenty-four hours ?

Mr. DAVIS. If necessary they could have a hundred turn-outs at the end of the road.

Mr. HAYES. Suppose you had a thousand. If you have one car in that train not of the same grade, and going to the same place to unload, you cannot switch that car out in five minutes.

Mr. DAVIS. If you, as a railroad-man, say you cannot switch a car in five minutes, then, of course, we are so far apart it is hardly worth while to pursue the matter.

Mr. HAYES. But, taking the ordinary way-train, if you have the train ready, and car ready to switch, and know where it is to go, and cut it off, switching it at the right point, you can do it within five minutes. But you cannot take a train, and find a car in it that has to come out, and to find where that car has to go, and put it on a side-track. If you do it in five minutes you have got smarter railroad-men than generally run freight-trains.

By Mr. NORWOOD :

Q. I understood one of your deductions to be that the tonnage capacity by rail and water is far in excess of the products ?

A. If evenly distributed over the time.

Q. I understand that is, if the freight was sent regularly, so that you could be constantly employed through the time ?

A. Yes, sir.

Q. What do you consider the excess would be ?

A. I think we could move twice as much as is now being moved, if we had it to move in a uniform manner, with proper facilities at terminal points for each kind of freight.

Q. If you were regularly employed all the time ?

A. Yes, sir.

Q. In making that estimate, what roads do you include? You stated a while ago, I think, in answer to a question put by Senator Windom, that you only included roads that reached the Atlantic.

A. The Baltimore and Ohio Road and its branches into Baltimore, the roads into Philadelphia, the roads into New York, the roads into Boston, the roads to Montreal and Portland.

Q. You do not go south of the Baltimore and Ohio Road?

A. No, sir; except where you take it down the Mississippi, from the Mississippi to the Missouri Valley down to New Orleans.

Q. Then these roads you have mentioned have a capacity of thirty thousand tons a day?

A. Yes, sir; if it was equally distributed.

Mr. STRICKLAND KNEASS, assistant president of the Pennsylvania Railroad:

GENTLEMEN: For the purpose of facilitating business and giving you all the practical information that you desire, our company has requested its operating officers to come before you, that they may give practical answers to such questions as may be presented, and for that reason our general manager, Mr. Cassalt, and our controller, Mr. Lewis, are now here and will give you all information regarding the operating and general accounts of our road that you may desire. Col. Joseph D. Potts, who has charge of all the outside business connected with the Empire Fast-Freight Line upon our road, and is president of the Empire Line, has also kindly consented to meet you in our behalf so that you may have such answers given to your questions on the part of our company as will fully cover the field of your researches. I would respectfully request that Colonel Potts may be now examined.

The CHAIRMAN:

Colonel Potts will please state his position in the road.

Mr. JOSEPH D. POTTS: I have no official position in connection with the road itself, but I have charge as president of the fast-freight organization known as the Empire Transportation Company, which is an independent fast-freight line operating over the Pennsylvania Railroad, and some of its leased lines, and the various connections of that route.

By Mr. NORWOOD:

Q. Is your position similar to that of Mr. Hayes?

A. Very similar, sir; except that the company which I represent is a company that is known as an independent corporation. It is a private corporation, not connected with the railroad companies except as an agent.

By Mr. SHERMAN:

Q. A stock company?

A. Yes, sir.

By the CHAIRMAN:

Q. Please state the nature of the connection and the business done through it?

A. The business is very similar; indeed I may say is entirely similar to that described to you by Mr. Hayes, except that instead of the railroad companies owning the cars we use, they agree with us to furnish them. We furnish them and are responsible for them in all respects;

pay for them and own them. They allow us the same car-service that the co-operative lines allow each other, viz, one cent and a half per mile run per car, that being supposed to be about a fair equivalent for the responsibility of keeping them in order, for loss by decay, and for interest on cost. That is a cent and a half per mile run per car.

By Mr. DAVIS :

Q. A cent and a half a ton a mile for a car, I understand?

A. No, sir; a cent and a half for a mile run; a car of eight wheels.

Q. What capacity?

A. They are built to carry twelve tons.

By Mr. NORWOOD :

Q. Still the tonnage does not affect the price paid?

A. It does not, at least on certain roads. The method of compensating the car-owner differs on various roads. The western system is that which I have just stated. The eastern system is very ordinarily either by the ton of freight carried per mile, or else by a certain percentage of the earnings on that freight per mile, but the general financial result is substantially the same thing. The advantage of the eastern system is that the car is not paid for unless it carries something. The compensation depends altogether in that case upon the amount that the car carries, or if it is a percentage on the rate, it depends on the amount earned on the freight carried. But our compensation, East or West, is that which is paid by the road for cars which the roads themselves own, and which they interchange with each other. It is the ordinary car-service which their experience shows to be about sufficient to cover expenses and interest.

The remainder of our connection with the road is that they hire us to do by the contract what they engage Mr. Hayes and his staff to do by salary. In most cases—I believe in all now—the contract rate is a certain percentage upon the rates of freight which are earned. If the rates of freight are high, our compensation is increased in gross amount; if low, our compensation is diminished, because it is a percentage of the earnings. For that percentage we assume certain responsibilities, viz, we collect all the freight-charges, or, if we do not, we lose them; we establish agencies all over the country, and pay their expenses, office-rent, stationery-expenses, the services of the men, &c. Those agencies are for the purpose of bringing the route to the knowledge of shippers of way-billing freight, issuing of through-bills of lading, collection of freight-charges, and of settling any claims shippers may have for damages, regardless of what part of the route the damage is done on. If, for instance, a shipper in Omaha wants to send freight to New York, he gets from us our through bill of lading. If that freight arrives here damaged, it is a matter of no moment to him on what road the damage occurred; he looks to our agent at this place to reimburse him, and it is done. If he is overcharged, that is, if the rate collected is higher than that agreed on, the agent here refunds him the money. It makes but a single organization for the public at large to deal with. Those agencies are very numerous, and reach a great many local points other than the principal commercial points, and it has enabled small dealers at small towns to secure all the advantages which would attend their location in large towns. We run, for instance, with our line through Easton, Pa. A man in Easton, wishing grain, can buy it in Peoria, Burlington, Omaha, or Chicago, if he chooses, and have it brought to him in the same car it started in, and just at the same rate as though

it had been shipped to New York. Beside the collection of earnings, we assume the payment of all damages that we cannot show to have occurred, through the carelessness of the roads themselves, which are tolerably numerous, such as thefts. Those we have to pay out of the percentage allowed us.

By the CHAIRMAN :

Q. How about accidents ?

A. Not if an accident is established on the roads.

By Mr. DAVIS :

Q. Have you regular tariff-sheets for different classes of goods ?

A. Yes, sir ; it is proper to say, however, that we are merely the agent of each road with which we make a contract ; we form, as it were, a joint agency, a kind of fusing of the roads into a single mass for this particular purpose. We have nothing to do with the fixing of the rates at all. The railroad companies fix the rates at which we carry traffic. Those rates are generally fixed by the general freight-agent of the road upon which the freight starts, and whatever rate he names is the rate at which we carry. Those rates are the same as the rates named for the carriage in any other freight-cars whatever.

Q. Do you pay these roads different rates, or are they all paid pro rata ?

A. The substantial result is about the same ; but every road has its own idea about a variety of points, and some prefer to make arrangements in one way and some in another. The car-service question each road determines for itself.

Q. You make the best arrangement you can with each road ?

A. Yes, sir ; but the substantial results are almost exactly identical. They reach the same result in different ways.

By Mr. NORWOOD :

Q. You have a separate contract, then, with every road ?

A. Yes, sir.

By Mr. DAVIS :

Q. Your compensation, if I understand it, then, is the difference between the arrangements you make with the company and your tariff-sheet ?

A. The arrangement we make with the company is not a fixed arrangement ; it is a percentage ordinarily of the actual rate. In other words, they undertake to decide about what the expense of doing the work by salaries would amount to in a percentage on the rate, and that is about what they give us. The only substantial difference, therefore, between our own line and a co-operative line is to be found in the actual financial results to the road itself ; that is, whether it is cheaper for the road to have this work done by contract, or to have it done by parties to whom it pays a salary. Which is the cheaper method, I do not know that I can answer. My impression is that our method is cheaper to the roads.

Q. Do you, or the company, discharge the cars at the ends of the routes, or at your destination ?

A. At some points we do. At New York, for instance, we furnish our own depot. It is a peculiarly expensive place, and the business is very large, requiring a very large outlay of money to provide the necessary pier and depot-room. No co-operation could be secured among the various railways we serve for the furnishing of these large facilities. The road over which we run into New York is a short line of only some

seventy-four miles, and it could not afford to undertake alone to furnish the expensive depot facilities requisite at this end of the line. The other roads did not feel disposed to furnish any share of it, and the general arrangement is, therefore, for us to furnish the depot here.

Q. Have you agents or offices in all the principal points of the West and East?

A. Yes, sir; not only at all the principal points, but at a great many minor points.

By Mr. NORWOOD:

Q. As I understand you, then, while of course there is a profit to both the railroad and to your company, you state that the expense to the producer and the consumer is no greater than if the railroad worked by itself?

A. No, sir; our rates are at all times the same as they are in the co-operative line and in the railroad companies' own cars.

Q. I understand you to say you think your plan is the cheaper?

A. Yes, sir; to the railroad. I think it gets more net money than it can do by the co-operative or other existing methods.

Q. Your rates, however, are the same as the co-operative line?

A. Precisely so, at all times.

By the CHAIRMAN:

Q. What number of cars have you in your line?

A. We have between 3,000 and 4,000.

Q. Are there any other lines used on the Pennsylvania Road?

A. The Union Line was a line precisely similar to ours.

Q. Is that running now?

A. Yes, sir; but the Pennsylvania Railroad Company bought out all of its cars last summer.

Q. There is, then, no other freight-line running on the Pennsylvania Railroad but yours?

A. No, sir; I think the Merchants' Dispatch, running on the New York Central, owns its own cars. There are a large number of short lines in Pennsylvania established by law. By the old system of public works, under State regulations, the State furnished nothing but the road and motive power, and any one had a right to put on his own car or cars; and that same system has been inherited by the Pennsylvania road, and, indeed, it is made obligatory on most of the Pennsylvania roads to haul any safe car the owner thereof chooses to present for towage.

Q. Is this discrimination that you speak of by percentage, in addition to the mileage for your car?

A. The percentage compensation allowed is in addition to the mileage, which is simply the ordinary mileage they pay for cars.

Q. You receive, then, a cent and a half a mile for every mile your cars run, and, in addition to that, a certain percentage on the amount of earnings?

A. Yes, sir; for which we do the service I have mentioned.

Q. Can you state now about how that percentage ranges?

A. The percentage is ordinarily a fixed thing. I think it will probably run from 5 to 10 per cent., according to the character and cost of carriage of the goods.

Q. The earnings?

A. Yes, sir.

Q. I understood you to say you had nothing to do with the establishment of prices of freights.

A. No, sir; not anything, except so far as we may represent matters to the proper general freight-agent as to what the necessities of any case or set of circumstances seem to demand.

Q. Is this company entirely independent of the railroad company?

A. Entirely; yes, sir.

Q. Are any of the directors or officers of the railroad company interested in your line?

A. I think none of the directors of any railroad company are interested in our line. I know of none. There are a few of the minor officers, of perhaps not over two or three of the roads, who have an interest; small stockholders. I do not think any officer who has any voice whatever in determining our relations ever had any interest. Those that have, have bought their stock in open market, as they would buy any other stock.

Q. But you do not know that any of the directors or controlling officers of the railroad company have now any interest in your company?

A. Not any.

Q. You understand that there is a certain charge of that kind?

A. Yes, sir; but I do not think there is 5 per cent. of our property owned by parties having anything to do with the railroad companies we traverse.

By Mr. DAVIS:

Q. I understand your line is principally on the Pennsylvania Road?

A. We run over the Pennsylvania Road east of Marysville, where the Northern Central Road crosses, then follow the Northern Central up to Sunbury; we then follow the Philadelphia and Erie to Erie. From Erie we branch off to the different western points.

Q. Do you use roads other than those that are controlled by the Pennsylvania Central?

A. O, yes, sir; the largest portion, about 85 per centum of the mileage, of the roads that we run over are not only not controlled by them, but are very strong enemies of the Pennsylvania Central in a business point of view. Between New York and Erie we run over the New Jersey Central, Lehigh Valley, the Philadelphia and Reading until we strike the Philadelphia and Erie. West of Erie we run over the Lake Shore, Chicago, Burlington and Quincy, Burlington and Missouri River, the Cleveland, Columbus and Indianapolis, and the various roads to Saint Louis.

Q. The cause of the question was, when you were introduced I understood you represented the Pennsylvania Road.

A. That part of our route from which there is no divergence, except at its termini, is the route which is controlled by the Pennsylvania Railroad, namely, the Philadelphia and Erie Road. We run over that line its entire length, and hence it might be considered as the trunk-line of our whole system, and therefore, in a measure, we represent the Pennsylvania Railroad Company's freight organization more especially than any other. In fact we are the only fast-freight line now running over any of the Pennsylvania Railroad Company's organization, except as before stated.

By Mr. SHERMAN:

Q. Do you run on the route between Harrisburgh and Pittsburgh?

A. No, sir; that route was occupied by the Union Line.

Q. Who runs that route now?

A. The Union Line still exists, but the Pennsylvania Railroad Com-

pany bought out all of its cars. It was formed at a time when the Pennsylvania Railroad had no connections west of Pittsburgh which they controlled, and when many of their western connections were poor and could not furnish the necessary equipment for accommodating the trade that was tendered; some of them were partially antagonistic to the Pennsylvania Railroad, and the Union Line took the intermediate position of joint agent of all the lines, and furnished cars extending over the various western roads to the Mississippi and the Ohio; but since it was established in 1862, nearly all of such western roads have passed under the control of the Pennsylvania Railroad, either by lease, purchase, or otherwise, and there was no longer the same occasion for such an intermediary.

Q. What company runs on the Fort Wayne Road?

A. The same company.

Q. Then those lines are run by the Pennsylvania Company without an intermediate company?

A. Yes, sir; they still maintain the organization, inasmuch as it is a useful commercial organization.

Q. But still the ownership of the cars is in the company itself?

A. Yes, sir; instead of paying a percentage as heretofore to the Union Line organization, they pay the expenses of that organization—that is, of the men, the salaries, &c. They employ them.

Q. In other words, they have substituted their own agents for another company?

A. Yes, sir; that is, without dismissing their own agents, they have also employed the agents and *personnel* of the Union Line.

Q. Are you prepared to tell us to what extent the Pennsylvania Central Railroad Company use the canals of Pennsylvania, and how much is the tonnage of those canals?

A. I could not give you any very accurate information on that point.

Q. We desire to ascertain from some one the extent to which the Pennsylvania Central use water-transportation, and the cost. I will ask you the same question I put to Mr. Hayes; you see what I wish to arrive at. I wish to get, if possible, the net cost over and above the interest on bonds, &c., and capital employed, of running a ton of freight from Chicago to New York, or from New York to Chicago. As near as you can get at it, what would be the maximum cost?

A. It depends almost entirely on quantity.

Q. You know the route very well between Chicago and New York, via Philadelphia, Pittsburgh, and Fort Wayne, or, if you choose, you can take it via the Philadelphia and Erie Road, and Lake Shore route. Could you give us the net cost?

A. Do you mean the present net cost, what it now costs them with the present business? Is that your idea?

Q. Yes, sir. That probably would be the better way, taking the whole line through from Chicago to New York.

A. I could not answer you what it has cost on the Lake Shore Road, because I have not seen their report for 1872. The cost on one road per ton per mile is not a criterion of the cost on another road if the conditions vary.

Q. Then you are not able to give the whole line?

A. No, sir. I can tell you what it costs on the Philadelphia and Erie; it costs them on an average about nine-tenths of a cent per ton per mile, I think a trifle under that. That was the actual operating cost, the entire amount of money which they disbursed and charged to freight expenses. It included the maintenance of track, the supply of the motive-

power, the repair of the cars, and all of the compensation of the men engaged in moving the trains and in securing the business.

Q. What percentage of the aggregate receipts is the running expense of the road?

A. It was in the neighborhood of 80 per cent., I think. I could tell you accurately by reference to the report. That is not far from right.

Q. Then what would you say would be the net cost, including the interest on capital invested, of carrying a ton a mile on the route from Chicago to New York as near as you can get at it? Or, if you prefer to, confine it to the Philadelphia and Erie route.

A. I should like to give you a little illustration to show how the cost differs with different circumstances. I had occasion to investigate two roads some three years ago, and to compare them. The one did a business I think of some 400,000,000 of tons one mile in a year; the other about 15,000,000, if I recollect right. The difference was very great. The cost per ton per mile on the road that did the large business was about one cent; on the route that did the small business it was about $5\frac{8}{10}$ cents.

By Mr. DAVIS:

Q. What caused that difference, if you examined?

A. The large amount of fixed expenses and the small amount of tonnage moved. Out of every hundred tons of engines, cars, and freight moved over the smaller road, only 19 per cent. paid any money. I judge, though I do not know, that the kind of lading was light and bulky, and perhaps in very small quantities, while their fixed station expenses were probably large. It was a road that ran into New York. The road that did the large business—the Philadelphia and Reading—charged the public, I think, about a cent and three-quarter cents per ton per mile for doing the work. On the other it was $7\frac{6}{10}$ cents, and I think the Reading made much the most money on its capital.

By Mr. SHERMAN:

Q. The Reading has a very favorable descending grade nearly all the way?

A. Yes, sir; but it is obliged to haul its coal-cars back without any loading, so that its trains only average, counting the round trip, half loading.

Q. What is the aggregate tonnage of the Pennsylvania Central?

A. About 8,000,000 tons—the main line.

Q. Assuming the tonnage from Chicago to New York by that route is 5,000,000, can you form any opinion of the cost per ton per mile of carrying that large business the thousand miles between Chicago and New York? Have you the means to give what you are satisfied is an estimate of the actual net cost?

A. It would be but an estimate at the best, sir, and it would require some considerable reference to statistics to give. The best criterion, I think, is the actual charges for a term of years, that are about average years.

Q. Actual charges or actual expenses?

A. The actual charges, with the actual net financial results to the road.

Q. How can you learn the results when we do not know the amount of capital actually in the road?

A. I was thinking of the actual net profits; that is, the total amount of net profits.

By Mr. CONKLING:

Q. I observe in enumerating the elements of cost which entered the nine mills you spoke of furnishing motive power, wages, track and train hands, and of maintaining the track. Did that nine mills also include anything for the wear and tear of rolling-stock?

A. I presume it did. The general idea is that rolling-stock ought to be kept in substantially as good a condition at the end of the year as it was at the beginning, but without knowing what the condition of the stock was at the end and beginning of the year I could not say.

Q. But your understanding was that it included perpetual maintenance of rolling-stock?

A. Yes, sir; substantially so.

By Mr. SHERMAN:

Q. Who of the gentlemen in connection with the Pennsylvania Railroad can tell us anything about the canal—water transportation?

A. I think Mr. Kneass could, sir.

By Mr. NORWOOD:

Q. Are the rates on your line regulated by the rates on the co-operative lines?

A. They are all fixed at the same time and of the same amount. The same parties, in most or many cases, fix the rates on both lines. For instance, the Lake Shore Road, over which we run west of Erie, on freight originating out of Chicago which we take, fixes also the rates on freight taken out of Chicago by the Red Line, which runs over the New York Central, and fixes also the rates upon the South Shore Line, which runs over the Erie Railway, or, in other words, the Lake Shore Road has on its route all known kinds of fast freight lines; that is, it has three different co-operative lines, and ours, which is a separate institution. The same general freight-agent always fixes the rates for all the lines there, so far as we understand it, the same.

Q. I understood Mr. Hayes to say that the rates on his line were regulated to some extent by the rates on the water line?

A. I think the rates on the rail routes are regulated to a certain extent, at certain seasons, by the rates on the water line.

Q. Do you regulate your rates by his, or by the water line, independently of his?

A. We do not regulate them at all.

Q. I mean the line over which you run.

A. The method of fixing is about this: The various freight representatives of the different roads going eastward from Chicago usually fix unitedly upon the rates which are to govern all shipments out of Chicago by each of the lines, their own roads, and the lines running over them.

Q. Does that include Mr. Hayes's line?

A. Yes, sir; and the Red Line and our line and any other line. We would get our information from the general freight-agent of the Lake Shore Road, and he from the general freight-agent of the Michigan Central. Now, what governs that joint convention in determining the rates which should rule on their respective roads is sometimes the competition of water routes, and sometimes other considerations. At the present moment the competition of water routes does not affect it at all. The rates last week were higher by lake and rail through from Chicago to New York than they were by all rail through from Chicago to New York. That arose from the fact that the lake rates from Chicago to

Buffalo depend upon the fluctuating demand for transportation. They will sometimes not only vary day by day, but hourly through the day. If there happens to be a large influx of vessels brought in by a favorable wind the rates will go down, and the reverse will take place when there is a reverse condition of things, and this action takes place instantaneously, and ordinarily without any combination on the part of the vessel-owners. Last week there was a sudden call for much transportation, I suppose caused by some sudden foreign grain demand. It was in excess of the capacity of the lake to furnish, and vessel-owners rapidly advanced their prices from 6 to 15 cents a bushel. Now, that, added to the rail price east of Buffalo, or east of Erie, made a higher rate than the current all-rail rate from Chicago at the same time, quite considerably higher; so that last week in adjusting the rail rates they were not at all affected by the lake rates. But the probabilities are that they (the rail rates) will be soon advanced, and because of the demand which caused the just-described advance in the lake rates to take place.

Q. There was an advance in the rail rates last week, was there not?

A. Yes, sir; of 5 cents toward the close of the week; but it took place several days after this advance on the lake.

By Mr. CONKLING:

Q. Why was that advance at that time?

A. On account of the demand for transportation. The demand is very large just now.

Q. Nothing else?

A. I think not, sir.

By Mr. NORWOOD:

Q. Such pressure occurring suddenly when freight by water goes down, do you lower your rates accordingly?

A. If it is a sudden spurt there is no change. Very often there is a large rail demand and corresponding call for transportation by water.

Q. Then do your rates go up where there is a large rail demand?

A. Yes, sir; it is a manufactured article, though a service, and is produced by the consumption of labor and material, and its price is regulated by supply and demand.

Q. Your rates, then, are pretty well regulated by supply and demand?

A. Yes, sir.

By Mr. CONKLING:

Q. You hold a thing as worth just what it will bring?

A. Yes, sir.

By Mr. NORWOOD:

Q. You are not regulated, then, by a percentage of profit upon your investment?

A. Practically we are. That is inevitable.

Q. But that is not standard with you. Of course you go in for the profit—I understand that—but I mean to say, that is not the standard by which you are governed?

A. No, sir; I do not think it is the standard by which the price of transportation is governed any more than that by which the price of any other manufacture is governed; but it is substantially done, because, if the charges were unreasonably high, the large profits would tempt the creation of new competitors, and reductions would follow.

By the CHAIRMAN :

Q. But as to railroad lines ; they would not build new railroads ?

A. There would be probably what would be as good for the public, a great enlargement of the capacity of the present rail lines. By adding two tracks to each double-track road now existing you can serve the public cheaper than by building another double-track road, because you can devote two tracks solely to freight, and save in various ways, but especially in two ways. You save the delay to your freight trains, and you thereby are enabled to move many more tons in a given time. The more tons you move in a given time the less the cost per ton required to meet an interest on the outlay for the track and equipment.

Q. What are the other non-co-operative lines in the United States beside yours ?

A. As I stated, there are a large number in Pennsylvania, which are there by virtue of State legislation ; they have always been there. Some are very small, and some larger.

Q. Do they operate upon any of the great lines running east and west ?

A. They do not go beyond the borders of the State of Pennsylvania, I think, unless they may perhaps run into Maryland, on the Cumberland Valley Road.

Q. Do you know of any other non-co-operative lines in the United States except those you have mentioned ?

A. No, sir. The Merchants' Dispatch, on the Central, I think, is a co-operative line. I think there is an oil company, or, rather, a car company, for the transportation of oils, which owns its own cars, and gets an allowance from the Lake Shore and New York Central Roads for car service.

By Mr. NORWOOD :

Q. You heard Mr. Hayes's statement about the amount of tonnage in the country ?

A. I did.

Q. Do you corroborate his statement ?

A. I heard him as he went along, and my impressions are that his statements were correct.

By the CHAIRMAN :

Q. Has the increase of tonnage upon other roads been about or anywhere near the equivalent of that on the Pennsylvania Central Railroad, per annum ?

A. I think so, substantially.

Q. Reading their reports I find that the average increase for the last five years has been about 800,000 tons per annum. That is my recollection of it. Am I about right ?

A. I cannot give you the amount per annum, but I know they have doubled about every four years in their tonnage.

Q. On the assumption that the increase is the same upon the other roads, take the five leading roads to the east, the aggregate annual increase would amount to four million tons per annum. That is about equal to the entire tonnage of the Pennsylvania Central four years ago.

A. I think it was more than four millions four years ago.

Q. Five years ago it was four millions. Now if that increase is to continue in the future the conclusion I draw—and I want to know wherein it is defective—is this : That if you were to construct a new double-track railroad every year with the capacity of the Pennsylvania

Central Railroad five years ago, the additional business each year would give that new road a business equal to what the Pennsylvania Central had five years ago. Am I wrong or not?

A. I think so, for this reason: If you have analyzed the tonnage of the Pennsylvania road, you will find that the bulk of its increase has not been in what is technically called through-tonnage; that is, tonnage interchanged between widely-separated places in the West and the East, but in what is known as local or short-movement tonnage. Now, that tonnage is a matter of growth, and tolerably slow growth, and a new road built through a new country would have to wait its time and gradually build up its local trade before it could reach anything like that figure. Through-tonnage does not increase at that rate.

Q. The inference I draw from my position is this, that it will be in a very few years impossible for the existing railroad lines to convey the freight from the East and West.

A. This increase is not in the through-tonnage.

Q. There is a large increase of that, you know?

A. O, yes; but the bulk of the increase is in the local tonnage. Coal is a very large item. The coal transportation of the Pennsylvania Railroad Company last year was three and a half millions, or very nearly one-half of its entire tonnage.

Q. Do you think that increase has been regular upon all the roads for the past few years?

A. It has been very regular, but the bulk of the increase on all the roads has been its local tonnage, which could not be transferred to a through-line.

Q. But I am looking to the overburdening of your own line?

A. Two additional tracks on each of the four roads mentioned would provide for the growth of the through-tonnage. There is not 4,000,000 tons increase on the Pennsylvania Road a year.

Q. Yes, but there is about 800,000; and I say, if you add two additional tracks every five years to the Pennsylvania Central, you will have at the end of that period as much freight for the new tracks as you had five years ago for the other tracks, and that the same thing would be substantially true of all the other roads; so that, unless some more liberal facilities for transportation are devised, it seems to me that the present railroads will have to very much increase their tracks.

A. They do not seem to have anything like reached to the present capacity of their tracks. I think the Pennsylvania road has been increasing, without increasing its track-room, about 25 per cent. a year.

Q. What do you estimate as the capacity of the Pennsylvania Central as it now exists for moving freight eastward, or has your attention been directed to that?

A. It would be only an opinion. At the present time I know that its limit is not found on the main line, on which the trains move, but at its termini, where the discharging of the cars is clogged for the lack of discharging facilities. It could move vastly more than it is moving now.

By Mr. NORWOOD:

Q. Are your charges affected in any manner by the shortness of the grain-crop in the West? Suppose there is a short crop, do you raise or lower your rates; or if there is a large crop, do you raise or lower your rates?

A. I suppose that, indirectly, they are affected by that, but it comes in a different shape. It is affected by the demand for transportation; if that is slack the rates have to be lowered. When the transportation

service cannot be sold at a good price it must be sold at some price, for it is more expensive to lie idle than to do something. When the service is in demand the prices go up.

Q. But if the crop is larger, charging the same rate, would you not make a greater profit by the increase of the transportation?

A. That would depend upon the degree of regularity with which it would be served.

Q. The element of regularity did not enter into my question or your answer a moment ago. I say if the crop is larger, by carrying a greater amount of freight, do not you make a greater profit?

A. Other things being the same, yes, sir.

Q. Why do you raise your rates of freight, then, when you have an increased trade?

A. Because the element of regularity comes in in this way. There has been no season that I know of when the demand for transportation has been equal to the supply throughout the whole year. There have been certain seasons when it has fallen off, simply because there was no demand East. It fell on the regular water-routes as well as on the rail-routes, and during that time it has to be sold at less than cost. When the demand becomes vigorous, as it will in the case of a large crop, there must be an additional charge made in order to make a fair average rate throughout the year. If I understand your question, that is about the answer I wish to make.

Q. Then you put your answer on the ground of the irregularity of transportation when the crop is larger?

A. I am not sure that I get your idea exactly.

Q. My question was simply this: Why is it, when the grain-crop is larger, that your rates of transportation are increased, when, by reason of the increased crop, your profit must be greater at the same rate than when there is a small crop, all other things being equal. Now, I understand your answer to be that, because of the irregularity of transportation, when there is a large crop, you have to charge a higher rate of freight.

A. No, that is not exactly the idea I meant to convey. What I meant was, that at no time in any year within my knowledge, whether the crop was large or small, was there a regular demand for transportation up to the amount that the various lines could supply. Even when the crop was large cars lay idle at certain seasons, and because many laid idle the service was performed at a loss. If there is to be a fair average annual result to the transporter, then, when the demand again picks up, there must be a sufficient increase of charges to make a good average price. The average price for the whole year for the last five years would not be an unfair price.

Q. Is it not true, in any ordinary business, that the larger amount of goods a man sells the smaller profit he can afford to charge?

A. Yes, sir.

Q. Then, if you have your roads and your rolling-stock on your hands, and your employes, the question I want you to answer is, why is it that when you have got more freight to transport you increase your rates?

A. If you will allow me I will make an illustration. If a manufacturer was to lie idle for two months in the year, and then have a large demand for his goods—up to the full capacity of his manufactory—he could not supply the amount that he furnished during the time of the year that he run so cheaply as he could have supplied them if he had a steady demand throughout the entire year. There would be part of the year when he would be fully taxed, but there was part of the year when

he would be idle, and if he intends to have a fair revenue upon the capital invested in his factory he must get larger prices for the goods he makes during the time that he runs than he would need if he had a demand sufficient to enable him to run steadily the whole year round.

Q. Taking your illustration, it seems to me that where the crop would be small, then you would charge a higher price.

A. But, unfortunately, nobody wants to transport when the crop is small. The demand for transportation is much short of the supply.

Q. Would not you want a higher price, in order to make your interest on the capital invested.

A. If we could get it; but it is out of the question to get it.

Q. But the grain is there; it has to be transported.

A. Then it would hardly be called a short crop, so far as the transporter is concerned.

Q. I do not mean a crop where there is no grain exported; there is wheat exported from the West. I mean new grain. Suppose it falls off 20 per cent. this year from what it was last year. Now, I understand you that this year you will reduce your rates because the crop is less. If next year it is 20 per cent. over what it was last year you will increase your rates because there is more grain to be carried.

By Mr. CONKLING:

Q. There being in both years, you mean, the same fluctuation of glut and scant?

A. If I understand you to mean that the demand for transportation is the same in each year, there would be no change in the rates.

By Mr. NORWOOD:

Q. Well, the demand, of course, cannot be the same each year, because my supposition is, that there is not the same amount of grain to be carried each year; but you have the same capital invested, &c., and have the same employes, and are to no more expense whether the crop is short or large. Now, why is it if it is 20 per cent. greater one year than another, you charge an increased rate of freight? The irregularity, now, that you speak of, is assumed to be the same in either year.

A. But still, in the one year the demand is not sufficient to employ the transportation facilities offered, and in the other year it is more than sufficient. Do I understand you correctly?

Q. I did not understand your answer.

A. In the short crop year, if I understand you, the demand for transportation is not equal to the amount of transportation facilities offered, and in the next year the demand for transportation is in excess of the transportation facilities offered.

Q. Oh, no, sir; that is not my supposition, because you have stated, and so has Mr. Hayes, already that you have got more transportation now than would carry double the products of the West to the Atlantic coast.

A. I did not understand you to ask me to affirm that part of Mr. Hayes's statement. I thought you referred to the general statistics as to the tonnage moved. Mr. Hayes has gone into that more thoroughly than I have, and I could not say whether the amount of transportation facilities which he there names is or is not correct. There are times, however, as at the present time, when the amount of transportation offering by rail and by lake and rail, is greater than the facilities offered by rail and by lake and rail. But, in the very same year, there are other times when the amount of transportation offering is very much

less than the facilities existing. For instance, in July and August we had quantities of idle cars; now we have a demand for more cars than we have. What it may be a month hence nobody knows. It depends very much on the foreign demand. I think that, taking the average movement, there is now sufficient transportation facilities to move the stuff that is to come East. There is always a large excess of unused facilities going West.

Q. You think, then, that the transportation is equal to the product coming East?

A. Equal to the amount that wants to come East? Yes, sir; I think it has been so during this year.

Q. Now, then, if this year was a short year, short of your capacity to transport, why would you charge less for it?

A. Simply because we would not have customers for the service we offer, and we have to tempt them by offering at less than cost.

Q. Then, when they tempt you, you charge them a higher rate?

A. When they want more than we can furnish we do. We do just as anybody else who manufactures anything.

By Mr. CONKLING:

Q. Is not the short truth of the whole matter that the yard-stick by which you measure is not the cost of production, but how much the commodity will bring?

A. Substantially so, sir; but, practically, the cost of production does regulate the price, and the best illustration of that is, that there has been a constantly diminishing average charge since the war closed. Now it is scarcely half what it was then.

Q. That is true, you mean, generally and constructively and eventually, but, in point of fact, on any given occasion you regulate, do you not, your tariff of freight by the compensation which, under the circumstances, you can get?

A. Well, that is measurably true, yet there are sometimes modifying circumstances which any sagacious transporter would always have reference to. For instance, if he undertakes to tax a party manufacturing on the line of his road unduly, because there happens to be a sudden demand, he will dampen the business ardor of the party, and there probably will be no increase in his manufacturing establishment. If he pursues a careful, considerate course, and has in view the doctrine of "live and let live" all the time, he will have a rapid and continuous growth on the line of his road, and that, I think, is the point at which most roads have arrived.

Q. Then, if I understand you, this would be a fair inference, that the law of supply and demand governs you, except that true economy and conservatism leads you to avoid anything which you deem extortion.

A. Yes, sir.

Q. That is your proposition, is it not?

A. This is the general idea stated a little more broadly, that the transporter wants to get a fair price, and he deems that a fair price which his customer can afford, and the amount his customer can afford is that sum which will not repress production. If the transporter charges so much that the party cannot work profitably, production will be repressed. He must have reference to the profit of his customers. If he does not he will soon have no trade of any account, or, at least his trade will not grow.

Q. So that not meaning to reap advantage oppressively on the misfortunes of the time and the producer, you do mean to avail yourselves

of all that the law of supply and demand will give you in return for the transportation?

A. That is precisely the idea, sir.

By Mr. SHERMAN:

Q. Does not another element enter into it—the question of competition—whether you do not charge a much higher price for shorter distances frequently because you have no competition from those points?

A. That is done; that has been done to a greater extent than it is now. I think where roads are managed by men who have been trained to the business, and who have broad commercial ideas, they regulate their rates as much by the competition of their customers' markets as by the competition of rival transporting lines. For example, on the Pennsylvania Road, at Johnstown, is, perhaps, the largest rail manufactory in Pennsylvania, and perhaps in the United States. It has grown from a very small beginning. It cannot get a pound of raw material in there (except that which is produced around its place) except over the Pennsylvania Road. It cannot get a pound of its manufactured product to market except by the Pennsylvania Road. So far as power is concerned, that road can charge it any sum it pleases, but it has encouraged its growth from a very trifling institution to a very large one, by having constant reference to the competition of the markets this party had to meet, as well as to the profits of the road itself, in the transportation. And it is so with, I suppose, four hundred or five hundred different enterprises along the same road—lumber enterprises, coal enterprises, and a variety of iron enterprises—until that traffic on the line of the Pennsylvania Road that is entirely beyond competition, except competition of markets, is vastly greater than that which is known as competitive traffic.

Q. Still, is it not true that railroads very often, almost as a rule, charge more for nearer points, because there is no competition?

A. I think it is more frequently the case on new roads managed by parties inexperienced in the business. It has been so, to a large extent, on the new roads in Illinois, there is no doubt of that.

Q. It is a great point of complaint that they make discrimination against localities that have no competing lines.

A. Yes; and it is an injudicious policy, and does harm to the road.

Q. Is not that, so far as your observation extends, one of the great leading causes of complaint by the farmers themselves?

A. I think that is the principal one.

Q. They complain that the price of freight to them to their nearest market, a short distance, is greatly in excess of the long distances.

A. Yes, sir; I think it is their chief complaint, and a very sound one.

By Mr. NORWOOD:

Q. Do they not further complain that it takes about three bushels of wheat to get one to market by rail?

A. They have made a statement of that kind, which is rather attractive to the general mind, but if wheat is shipped from California to New York, it would take many more bushels.

Q. I am not speaking of California; I mean out here in Illinois.

A. Yes, I understand that, sir. I think it is hardly a proper illustration. How many bushels it takes to get one to market depends on the distance the producer is from the market. If the producer wants a certain service performed, he must pay somebody a fair price therefor, or do it himself. I have no doubt the statement is correct.

By Mr. DAVIS:

Q. We are anxious to know the capacity of a double-track road. Mr. Hayes, I think it was, gave us an idea that every half hour with a train was its full capacity. Do you agree with that statement?

A. No, sir. I have been in the habit of running freight trains five minutes apart.

By Mr. CONKLING:

Q. Is that on a road running passenger trains, as well as freight?

A. Yes, sir; running five minutes apart, in the manner stated by Mr. Davis, in convoy. I think I could run convoys on a freight road, so far as the mere movement is concerned, in sections five minutes apart, if no passenger trains interfered; but an exclusively freight road I should think entirely impracticable, that is, a purely freight road I do not think could be sustained at all.

Q. Why?

A. The public along the line would have no other means of rail travel, and they would certainly insist on being accommodated.

Q. You assume for your purpose that the theater of your freight road that we are talking about is not occupied by any other road?

A. Yes, sir.

Q. But if you had a freight road parallel?

A. With a passenger road parallel it could be. But in the question of capacity you must take into account the time required for repairs of your track. There would have to be a certain time of each twenty-four hours devoted to track repairs, when you could run no train over it. As roads are now managed the trains are so regulated that there is a considerable interval after a convoy runs, perhaps three or four hours.

Q. In other words, you group your trains in certain portions of the twenty-four hours to leave certain intervals?

A. Yes, sir; for track repairs and passenger trains.

Q. In the case of a road in proper condition, properly ballasted and in good condition, running freight trains over it at the rate of twelve miles an hour, what portion of the twenty-four hours averaging the year would be necessary to maintain that track and road-bed, floods or extraordinary accidents excepted?

A. That would be a mere matter of judgment. I should think at least one-third of the time would be requisite.

Q. Throughout the year?

A. Yes, sir; I should think so. Without going carefully into an examination it would be hard to form an accurate conclusion.

Q. That would include renewal of ties when they rotted or split, and everything which concerned the road-bed, as well as the service?

A. Yes, sir; perfecting the drainage, ditching, and all that sort of thing.

The committee here took a recess of fifteen minutes.

Mr. POTTS (resuming) to Senator SHERMAN. You were speaking of high local charges. They are made chiefly on roads that are not known as through lines. They are made from a non-competitive point to what is known as a competitive point; for instance, from some local station to Chicago, or to Peoria, or some local station to Bloomington, some point where they strike a through line; but if you had a main line of through road, and did not have the branches necessary to tap all these points, your main line of road would not interfere with this sort of charges.

By Mr. SHERMAN:

Q. That is not the point. Take one of these main lines—one by way of the Pennsylvania Central, Pittsburgh, Fort Wayne & Chicago—doesn't it sometimes happen that they charge a higher price for a lesser distance on that main line?

A. I think not, sir; they have it as a policy, and I think it is an invariable policy, always to charge at least as small a rate to a near point as to a farther one. Sometimes, if the competition between the trunk-lines becomes very vigorous, and rates are away below cost, they do not charge any less to a near point than they do to a far one, but I think they never vary from the policy of never charging more.

Q. Then on other lines they sometimes charge for a very short distance a rate greatly in excess per mile to a long distance. I know that is a common case. I have heard complaint very often made in Ohio that a nearer point to the place of shipment sometimes has to pay a higher rate even on main lines. Whether this has been true or not I do not know.

A. That ought never to be, but a higher rate per mile in a short line is necessary in order to do anything like justice to the transporter.

Q. Do you say that on these through lines they make it a point always to charge a less rate for a shorter distance?

A. I cannot speak for any other than the Pennsylvania Road, but I know that that is their policy. For instance, if they were to charge 20 cents from here to Chicago, or one-third what it probably costs to move the stuff, they would not charge more than 20 cents to Pittsburgh, Harrisburgh, or any other intermediate point; that is their policy, and I think it is invariable. There may be some accidental cases where it is departed from.

By Mr. DAVIS:

Q. Do I understand you that the tariff by the Pennsylvania Road today is the same rate, for instance, to Johnstown, which you spoke of just now, or any other point in that neighborhood, as it would be to Pittsburgh?

A. Yes, sir; that is, it is no higher.

Q. How far do you go out on the road before you reach the through rate?

A. That I cannot tell you. We do not have anything to do with the local business of the road, at all. I merely speak from general knowledge. Last week and week before there was a severe fall in west-bound rates, and while we were receiving instructions from the general agent in regard to rates to Erie, Cleveland, &c., he remarked that he was obliged to make his Pittsburgh rates, I think, 35 cents on first class, because his rate to Cleveland was 36 or 37 cents, and it was their invariable rule never to charge more to a near point than to a far one. He further remarked that it carried their rates down back to, I think, Harrisburgh, somewhere in that region.

Q. Then to Harrisburgh from Philadelphia it would be the same charge as if to Pittsburgh?

A. I am not sure as to the points, but the general idea is that where there is great reduction in rates, that policy would carry the reduction back to a very near point, but they do not charge more to a near point than they do to a distant point.

Q. Does your line ship goods to intermediate points?

A. No, sir, we are engaged in the securing and carrying of competitive traffic only.

Q. Then you could not answer as to the tariff matter of the road as to short distances?

A. No, sir, I merely know this to be their general policy.

By Mr. SHERMAN:

Q. I am rather surprised to hear you state that. I do not know personally about it; but I have heard that matter made a complaint by business men, that they are compelled to pay a higher freight for a short distance.

A. I do not say that it is the invariable rule of all roads. I have no doubt that it is so in some cases.

By Mr. DAVIS:

Q. However, you only know by what some one told you?

A. Yes, sir.

Mr. A. J. CASSATT, general manager of the transportation department of the Pennsylvania Central Railroad, and Mr. SAMUEL G. LEWIS, comptroller of the Pennsylvania Railroad Company, examined together.

Mr. SHERMAN. You had better explain the difference between the Pennsylvania Company and the Pennsylvania Railroad Company?

Mr. CASSATT. The Pennsylvania Company controls the lines west of Pittsburgh. The Pennsylvania Railroad Company is the mother company, and has under its direct management the main line from Philadelphia to Pittsburgh, the road in New Jersey, and all other roads controlled by the company east of Pittsburgh.

The CHAIRMAN. Does the Pennsylvania Company or the Pennsylvania Railroad control the line from Philadelphia here?

Mr. CASSATT. The Pennsylvania Railroad Company.

Mr. WINDOM. By the Pennsylvania Railroad, then, you mean from New York to Pittsburgh?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. And all the balance is the Pennsylvania Company?

Mr. CASSATT. Yes, sir; all the lines west of Pittsburgh are under the management of the Pennsylvania Company, the Pennsylvania Railroad Company controlling the Pennsylvania Company by the ownership of a large majority of the shares. The Pennsylvania Railroad Company leases the Philadelphia and Erie Railroad; not the Northern Central. That is a separate company, but the Pennsylvania Railroad Company owns a controlling interest in the stock.

The CHAIRMAN. Mr. Cassatt, can you state the names and mileage of the roads owned and controlled and operated by the Pennsylvania Company?

Mr. CASSATT. No, sir; I cannot enumerate all the roads and their branches from memory. We have a map which shows all those lines, and shows how they are controlled and owned, which I can send you.

The CHAIRMAN. Have you one of those maps with you?

Mr. CASSATT. No, sir.

The CHAIRMAN. Are there any steamboat or sailing-vessel lines owned by either of those companies?

Mr. CASSATT. The Pennsylvania Railroad in leasing the lines in New Jersey leases with it the Delaware and Raritan Canal. It also bought the Pennsylvania Canal in purchasing the State works.

The CHAIRMAN. For what length of time is the lease of the Delaware and Raritan Canal?

Mr. CASSATT. Nine hundred and ninety-nine years. Then, in con-

nection with the Camden and Amboy road, we run steamboats between Amboy and New York. We own no line of vessels on the lakes. There is a line, the anchor line, running in connection with the Philadelphia and Erie, and also to Buffalo. It touches at Erie.

The CHAIRMAN. Is that owned by the Company?

Mr. CASSATT. No, sir.

The CHAIRMAN. Independent entirely?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. But it has running-connection?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. Can you state the nature of that connection with the vessels on the lakes?

Mr. CASSATT. Simply by contract, under which we have a through freight arrangement with them as to division of the rates.

The CHAIRMAN. Is that a permanent contract for a number of years?

Mr. CASSATT. This contract, as well as nearly all the contracts we make, are terminable upon one year's notice. I forgot to mention that the Pennsylvania Railroad Company is interested in a steamship-line from Philadelphia to Liverpool. It has a large interest in it.

The CHAIRMAN. The arrangement between your Company and the steamboat lines on the lakes is simply a running-arrangement then, *pro rata* freights?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. How is the compensation between the two apportioned?

Mr. LEWIS. They receive the best compensation they can get on the lakes, and the railroad carries it for the regular *pro rata* rail-rates from Buffalo or other points.

The CHAIRMAN. The steamers of that line, then, receive all of the lake compensation?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. They compete with other lines, getting the best price they can?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. When were those canals purchased by the railroad company?

Mr. CASSATT. When they purchased the line of railroad from Columbia to Philadelphia, belonging to the State.

The CHAIRMAN. Do you remember in what year that was?

Mr. CASSATT. It was in 1857, I think?

The CHAIRMAN. Has the Pennsylvania Railroad Company expended any considerable amount of money in improving and enlarging that canal?

Mr. CASSATT. Yes, sir; they spent a good deal of money on it.

The CHAIRMAN. How will the rates of freight on that canal compare with the railroad freights?

Mr. CASSATT. The canal is simply operated as a toll-highway.

The CHAIRMAN. The company receive tolls?

Mr. CASSATT. Yes, sir; there is no through business done on the canal at all; it does not extend further west than Huntingdon; it is operated in connection with the road; it is known as the Pennsylvania Canal.

The CHAIRMAN. What is its length?

Mr. CASSATT. It extends from Huntingdon to Columbia, about one hundred and fifty miles, and then from Wilkesbarre to Northumberland,

Lockhaven to ———, and there they join the other canal at Duncannon.

The CHAIRMAN. Can you give us the name of some person who will furnish us the rates of freight?

Mr. CASSATT. Gen. I. J. Wistar is president of the canal, which is operated as a separate company entirely.

The CHAIRMAN. You stated both the railroad of which you speak and the canal were purchased at the same time?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. And the other canal was leased with the New Jersey road?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. What have you to say with reference to the differential and discriminating freight-charges which have been discussed here as to the rule adopted by your road?

Mr. CASSATT. Mr. Potts stated the rule correctly, viz, that we never charge more to a nearer than to a more distant point. That is an invariable rule.

The CHAIRMAN. But you sometimes charge as much to a nearer point as you do to a distant point.

Mr. CASSATT. Yes, sir.

Mr. CONKLING. Do you embrace in that answer all this connection of roads, the Pennsylvania Railroad Company and the Pennsylvania Company?

Mr. CASSATT. Yes, sir; I know it is the rule on the Pennsylvania Company's roads.

Mr. CONKLING. What are the considerations on which those discriminating charges are made, where you charge, for instance, as much for half the distance as you do for the whole? Upon what economic considerations do you base such discrimination?

Mr. CASSATT. We think, in the first place, that the local rates named are reasonable and just about such as we can afford to carry for. Through rates are governed by competition. If we want to remain in the market we have got to take what we can get. That forces us below paying rates sometimes. If we put the local rates down to the same charge per ton per mile, the road could not live. Another reason is, you can afford to carry cheaper for a long than a short distance always.

Mr. CONKLING. Why?

Mr. CASSATT. Because you have certain fixed terminal expenses which are less per mile on long than on short distances; that is the principal reason; of course there are some others; for instance, you can get more service out of your cars on long runs.

Mr. DAVIS. What are your rates to-day to Pittsburgh?

Mr. CASSATT. I think they are about 35 cents on first-class freight from New York to Pittsburgh.

Mr. LEWIS. They fluctuate, and they are changing very rapidly now. It is pretty hard to keep the run of them.

Mr. DAVIS. What would freight be from here to Huntington to-day if it was offered?

Mr. LEWIS. That would be the same as Pittsburgh.

Mr. DAVIS. Either place would be the same?

Mr. LEWIS. Yes, sir.

Mr. DAVIS. Do you change your tariff? You have a published rate of tariff?

Mr. LEWIS. Yes, sir.

Mr. DAVIS. Do you change it every time you change your through rates?

Mr. LEWIS. We give notice to the agents what the through rate is, and the agents are then instructed that the rate must not be exceeded to any point this side of Pittsburgh.

Mr. DAVIS. How long has that been the case?

Mr. LEWIS. That has always been the case.

Mr. DAVIS. Does the same rule apply to your way-stations? For instance, a man at Harrisburgh brings you freight to carry two hundred miles on your road; would you charge the regular local rate for that two hundred miles, or a hundred miles, as the case may be?

Mr. LEWIS. It would not exceed the through rate.

Mr. DAVIS. Then, I understand you, no charge exceeds the through rate?

Mr. LEWIS. No, sir.

Mr. DAVIS. But you vary as you vary the through rate, if it is every day?

Mr. LEWIS. Yes, sir; sometimes we send out a notice in the morning and another in the evening.

Mr. DAVIS. To all the agents along the line of the road?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. Upon what principle do you base that rule? If the charges to-day at a local way-station are not more than they should be, why do you reduce them when the through charge is reduced?

Mr. LEWIS. We think it is not fair to the near freight that they should be charged more than the through freight, and we have to suffer, they getting the benefit of it.

The CHAIRMAN. Is it not as fair as to charge them as much?

Mr. LEWIS. No, we think not. The article will bear a certain amount of transportation charges.

The CHAIRMAN. What article do you speak of when you speak of those which will bear a certain amount of transportation charges?

Mr. LEWIS. Ordinarily heavy freights.

Mr. CONKLING. Such as what?

Mr. LEWIS. For local business, coal and iron. Through business would be meats and grain and corn.

Mr. DAVIS. Does your coal tariff change as often as you speak of?

Mr. LEWIS. No, the coal tariff does not change very often, of course. That was not with regard to charges, but with regard to the principle of charging the same for local as through. We divide coal into regions. We do not make a man who has a coal-mine within five miles farther than another man, pay, in consequence, ten or fifteen cents more a ton than the man who lives five miles nearer market. If we did we would rule him out of market when the coal was selling low.

Mr. DAVIS. I understood you to say that if you changed your through rate to Pittsburgh or Chicago each day, you would change your local rates as often?

Mr. LEWIS. Yes, sir.

Mr. DAVIS. Now you have a local rate for coal. Have you changed it since the season commenced?

Mr. LEWIS. Fortunately or unfortunately, the price of coal rules so low that the price we get on that is in no danger of being touched by any rates. It is carried down to a very slight profit, if any.

The CHAIRMAN. What are your charges on coal?

Mr. LEWIS. They vary from a cent to a cent and a quarter a ton a mile.

Mr. DAVIS. But I understood you 2 cents was your charge on through rate now—fourth-class rates?

Mr. LEWIS. Fourth-class rates are 22 cents a hundred pounds, or \$4 a ton to Pittsburgh.

Mr. DAVIS. How much is coal a ton from Westmoreland mines or any of those mines out there?

Mr. LEWIS. I do not remember the exact rate. It is all carried in their own cars and we give them a rate in their cars, amounting to about a cent a ton a mile. It is not a very high fraction on either side.

Mr. DAVIS. Suppose you furnished the cars, what would it be to-day?

Mr. LEWIS. If we furnished the cars it would be about a cent and two-tenths.

Mr. DAVIS. What would that be a ton to this place?

Mr. LEWIS. It would be about \$5 a ton, 25 cents a hundred.

Mr. DAVIS. That would be \$5 a ton from Westmoreland and your freight would be 22 cents a hundred?

Mr. CASSATT. We are speaking of west bound.

Mr. LEWIS. We do not always have the same rates each way.

Mr. DAVIS. What is your east bound rate to-day?

Mr. LEWIS. I do not remember that. I suppose about 40 cents.

Mr. DAVIS. From where?

Mr. LEWIS. Pittsburgh.

Mr. DAVIS. Then you have the same from Pittsburgh you do from Chicago, do you?

Mr. LEWIS. No, I do not remember what the rates are. I do not carry the rates in my head.

The CHAIRMAN. The rates from Chicago are 50 cents a hundred?

Mr. LEWIS. They would not be exceeded from Pittsburgh, then. They are lower, I think; fourth-class is considerably lower. Our fourth-class tariff rate from Pittsburgh would be about 36 cents.

Mr. DAVIS. Do you usually haul westward cheaper than you do eastward? You say it is 22 cents westward and 50 cents eastward—twice and a half as much eastward as westward. Is that common or usual?

Mr. LEWIS. No, sir.

Mr. DAVIS. Is there a cause for that at present?

Mr. LEWIS. The competition for trade.

The CHAIRMAN. It is cheaper going west than coming east?

Mr. LEWIS. It is just now.

The CHAIRMAN. Is it usually so?

Mr. LEWIS. No, sir; it is usually about the same.

The CHAIRMAN. What, in your judgment, is the effect upon freight charges of the consolidations of railroads such as have been made by the Pennsylvania Central Road?

Mr. CASSATT. I can only judge by results. Rates have been tending steadily down since the leading railroads have adopted the policy of extending their lines.

The CHAIRMAN. When was that policy adopted?

Mr. CASSATT. It was adopted pretty generally four or five years ago.

The CHAIRMAN. Has the reduction in rates been greater since that time than the fall in gold?

Mr. CASSATT. I think it has; that is to say, the average reduction.

The CHAIRMAN. I have a table here furnished by one of your agents at Chicago, and I had not the gold table, and I did not know what the answer would be. I find, for instance, that in September, 1865, the price of freight from Chicago to New York per bushel of wheat was 48

cents; to-day it is 27 cents. I doubted whether the fall in price was greater than the improvement in currency.

Mr. CASSATT. That is a fall in the rates of nearly a half. Gold has not fallen as much as that.

Mr. SHERMAN. Gold went down to about 1.30 just after the war was over, but then it rose up to 1.40 odd. In 1869 gold had risen to something like 40.

The CHAIRMAN. You think the effect of the consolidations is to reduce prices?

Mr. CASSATT. I do not know that this would necessarily be the effect, but that has actually been the result. That is, prices have fallen since the consolidations.

The CHAIRMAN. Do any of these consolidations include competing lines?

Mr. CASSATT. They may locally, but not through. Most of these roads were consolidated to form stronger through-lines from the West.

The CHAIRMAN. What, in your judgment, is the relative economy of the present system of railroad transportation and of an exclusively freight railroad?

Mr. CASSATT. I think if such a thing could be as an exclusively freight railroad, it could be operated cheaper than a road on which a miscellaneous business was done, especially if you did a business of one kind and ran all trains at uniform speed.

The CHAIRMAN. How frequently could trains be run, in your judgment, upon an exclusively freight railroad?

Mr. CASSATT. I do not think you could run them closer than every fifteen minutes, on an average, throughout the 24 hours. We run our freight trains in sections, with five minutes between each train; that is to say, we run from six to twelve trains, or sections, as we call them, on one schedule, but I do not think you could run trains closer, on an average, in twenty-four hours than fifteen minutes apart, in each direction, on a double-track road, because if you did the slightest detention here or there would block everything back; you must make allowances for necessary delays and detentions.

The CHAIRMAN. Would you not have to make an allowance for time to repair your track?

Mr. CASSATT. That would be included in the fifteen minutes. I think you could run about one hundred trains a day, in each direction.

The CHAIRMAN. Do you think that terminal facilities could be had that would enable you to discharge them as frequently as that.

Mr. CASSATT. That is simply a question of expense. You would have to divide your business; have one place for discharging grain, one for coal, &c., switching each class of traffic off at separate places.

The CHAIRMAN. What, in your judgment, is the most profitable speed for freight trains? I include in that the damage done to the road, and the rolling-stock, and every other consideration.

Mr. CASSATT. Of course, the slower you run, within limits, the cheaper it is.

The CHAIRMAN. That is, you could run your trains cheaper, but could you transport produce cheaper running five miles an hour than eight?

Mr. CASSATT. I think that is getting down a little too slow. I think you could run cheaper at eight than at fifteen.

The CHAIRMAN. Would not eight be more economical than five?

Mr. CASSATT. I do not think it would. I think that a running speed of eight miles an hour is about as slow as you want to run.

Mr. WINDOM. You think it would be more economical than to run at eight miles an hour ?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. There would be more profit in carrying at the rate of five than five ?

Mr. CASSATT. I think so.

The CHAIRMAN. What would you fix it at ?

Mr. CASSATT. I should say that the most economical speed, all things considered, would be a schedule speed of eight miles an hour, with a maximum speed of ten miles per hour. The only difficulty about such slow speed would be that you would get less service out of your rolling-stock, but, at the same time, if you kept everything moving promptly, you would probably get as much service out of it as at present. The great point is to keep everything moving, avoiding detentions at the termini of divisions ; if you do this, you will find that you will make good time, even if the actual running-time is slow.

The CHAIRMAN. What is your average time between Chicago and New York for freight ?

Mr. CASSATT. Our average running is about ninety hours. I think that is about it.

The CHAIRMAN. Are freights that are started from Chicago usually delivered in ninety hours in New York ?

Mr. CASSATT. No, I do not think they would average that. That is the schedule speed ; but you must make allowance for detention. Some of our trains run faster. The fast merchandise trains do, but the regular speed is about ninety hours.

The CHAIRMAN. Do you find, in practically operating your road, there is any great loss from trains being compelled to lie over and wait for passenger trains ?

Mr. CASSATT. No, sir ; there is not very much loss. If we ran all our freights at the same rate of speed, and only run one class of freight-trains, passenger-trains would interfere with them very little, except at the terminal points, Philadelphia and Pittsburgh, and there, if we had four tracks for fifteen or twenty miles, there would be very little interference.

The CHAIRMAN. So that now, in your judgment, you can transport about as cheaply as you could if running exclusively a freight railroad ?

Mr. CASSATT. Well, not so cheaply, but I do not think the difference would be very great.

The CHAIRMAN. What is the actual cost, as near as you can estimate it, per ton per mile over your road ?

Mr. CASSATT. It is about 8 mills, taking the average of business.

The CHAIRMAN. What do you include in that cost ?

Mr. CASSATT. The whole cost, everything ; everything chargeable to freight business. In making up that estimate, it is a little difficult to get at it, because there are some classes of expenditures that are not divided directly between passenger and freight expense. For instance, you have to make an estimate of how much is chargeable of track expenditure, to freight and to passenger business.

The CHAIRMAN. About in what proportion do you charge ?

Mr. CASSATT. About in the proportion of the mileage made by freight and by passenger trains, say 25 per cent. and 75 per cent. to freight expenses.

The CHAIRMAN. That is the mileage of the passenger-trains, about one-fourth of the freight-trains ?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. Is not the damage done to the track much greater by a fast-running train than a slow one?

Mr. CASSATT. There is a difference of opinion about that. On a passenger-train you have better trucks, the engines are somewhat lighter generally, and the train is shorter; there are fewer cars in it. Of course, if you get up to a very high speed, the damage would be somewhat greater.

The CHAIRMAN. In the judgment of your company, then, the injury to a road from a passenger-train is about the same per mile?

Mr. CASSATT. We have assumed that in dividing the expenses. That is what we make our calculation on.

Mr. CONKLING. And that calculation includes twelve-wheel cars?

Mr. CASSATT. All kinds of cars.

The CHAIRMAN. What is the life-time, so to speak, of a passenger-locomotive?

Mr. CASSATT. We think that the life-time of locomotives for passenger or freight is about ten years, taking the average.

The CHAIRMAN. About alike?

Mr. CASSATT. Yes, sir. We think that, unless we replace about 10 per cent. of our locomotives annually, we are not keeping up to the standard.

The CHAIRMAN. What is true as to passenger-cars and freight-cars?

Mr. CASSATT. I do not know that I could answer that. We examine them as they come into the shop. When an old and worn-out car is shopped it is a question of cutting up or repairing. If we cut them up we build a new car, and charge its cost to operating expenses.

The CHAIRMAN. But you have kept no account to know what the percentage is?

Mr. CASSATT. No, sir, I could not tell you that. I suppose, though, that passenger-cars would last fully ten years, with renewals placed on them.

The CHAIRMAN. And freight-cars probably as long?

Mr. CASSATT. Yes, sir, I think so, but that is a mere guess.

The CHAIRMAN. What proportion of the entire expenditure included in this item of cost is the maintenance of road?

Mr. CASSATT. About 25 per cent.

The CHAIRMAN. About 25 per cent. of the entire expenditures?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. You do not include in the 25 per cent. the maintenance of cars?

Mr. CASSATT. No, sir.

The CHAIRMAN. Do you know about what percentage that is?

Mr. CASSATT. That is about 10 or 12, I think. About 10 per cent. I find by examination of the report of the company for 1872.

The CHAIRMAN. What are the items of expenditure as you would classify them?

Mr. CASSATT. We divide our expenses into five principal headings—conducting transportation, motive-power, maintenance of cars, and maintenance of way, and general expenses. Conducting transportation includes cost of stations, conductors, brakemen, agencies, stationery, &c. Motive-power includes all expenses connected with the running of locomotives, repair, fuel, oil-waste, tallow, engineers, and firemen, &c. Maintenance of cars includes repair of cars. Maintenance of way includes all expenses for repairing the road-way, bridges, &c.

The CHAIRMAN. Can you state about what is the expense of running one of your ordinary passenger-trains per mile? I mean now the actual

running, leaving out repairs of tracks, and repairs of cars, and interest on investment. I include in this question simply this, the fuel, labor, repairs of locomotives, and the station expenses. If there are any other included in the running, you can name them.

Mr. CASSATT. Not including the track?

The CHAIRMAN. Not including the track.

Mr. CASSATT. I have never worked out the cost in that way, from the data in our annual report it can be easily arrived at. I have, however, figured out the cost of running a passenger-train, including all expenses, either direct or indirect, and make it about one dollar per mile.

The CHAIRMAN. Do you know what the fuel expense of running a passenger-train is?

Mr. CASSATT. We use about forty pounds of coal to the mile, and the coal costs us about \$2 a ton on the locomotive, without charging ourselves anything for transporting it. That would be 4 cents a mile for fuel. This applies only to the main line of the Pennsylvania Railroad.

The CHAIRMAN. Are there not statements made by some officer of all railroads, all leading railroads at least, itemizing all these expenses of running trains, the fuel, waste, labor, &c.

Mr. CASSATT. Yes, sir; we give it in gross, and you only have to divide the passenger mileage into it to get it.

The CHAIRMAN. Wherein does the expense of running a passenger-train exceed that of running a common freight-train?

Mr. CASSATT. In that you have more expensive cars.

The CHAIRMAN. That is interest on the cars?

Mr. CASSATT. Yes, sir, and the cost of repairing them, of course, which is, to a great extent, proportionate to their cost.

The CHAIRMAN. But I mean the actual running. The train ready to pass over without counting repairs of cars.

Mr. CASSATT. Without counting repairs of track?

The CHAIRMAN. Yes, sir; you say repair of track is assumed to be the same.

Mr. CASSATT. Then the difference in the cost of running a passenger-train and a freight-train is simply in the fuel, and probably in the number of train men employed.

The CHAIRMAN. It only costs 4 cents a mile for fuel for passenger-trains; what would you say for a freight-train?

Mr. CASSATT. About 50 per cent. more. Our average consumption of fuel on freight-trains is about sixty-five pounds a mile.

The CHAIRMAN. It would be more expensive then, so far as fuel is concerned, to run the freight than passenger trains.

Mr. CASSATT. Yes, sir; that is about the only increased expense, if you include only the actual cost of running the train, excluding repairs of cars.

Mr. DAVIS. Your men are more expensive on passenger-trains than on freight; are they not?

Mr. CASSATT. No, sir; very little more. The conductors are paid a little more, but the engineers are paid little less on a passenger-train for the same distance, because they do the work so much more easily and quickly.

Mr. NORWOOD. Is your fuel exclusively of coal?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. Have you any knowledge of the relative economy of transporting by rail and water?

Mr. CASSATT. No, sir, I have not.

The CHAIRMAN. Or of the relative cost of each?

Mr. CASSATT. No, sir; I have no personal knowledge of water transportation.

The CHAIRMAN. Your company is constructing a new freight line of road, is it not?

Mr. CASSATT. Yes, sir.

The CHAIRMAN. What are the termini of that line?

Mr. CASSATT. It starts from Driftwood, on the Philadelphia and Erie, and runs to Redbank. It makes a low-grade line from Pittsburgh to Harrisburgh.

The CHAIRMAN. What will be the grades?

Mr. CASSATT. I think the maximum grade is 16 feet per mile against the east-bound tonnage.

The CHAIRMAN. What is it on the present Pennsylvania Road?

Mr. CASSATT. We have there 52 feet against east-bound traffic and 96 against west-bound. The maximum grade west bound on the "low-grade line" is about 26 feet.

The CHAIRMAN. What will be the increase of the distance by that line from Pittsburgh to New York?

Mr. CASSATT. That depends on whether we take the freight around by Philadelphia or not.

The CHAIRMAN. By the route you would adopt will the distance be increased or diminished?

Mr. CASSATT. It will be about ninety miles further by Philadelphia.

Mr. DAVIS. What is your average passenger and average tonnage; the number of cars hauled by your locomotives?

Mr. CASSATT. I suppose we run about an average of six or seven passenger-cars to the train. On freight-trains probably twenty-seven or twenty-eight, taking an average of all trains, and of all parts of the road.

The CHAIRMAN. What are the average charges per ton on your road?

Mr. CASSATT. One and four-tenths of a cent it was last year.

The CHAIRMAN. That included all tonnage moved, the local as well as the through.

Mr. CASSATT. Yes, sir.

The CHAIRMAN. Which is cheaper—the through or the local?

Mr. CASSATT. The average of the through would be less than the local?

The CHAIRMAN. Do you know what is the average charge of your through tonnage from the West through the year?

Mr. LEWIS. It is a slight fraction over a cent, but I do not remember exactly what.

Mr. CASSATT. There is a large portion of our local tonnage we carry at that rate. All the coal business is done at about that rate.

The CHAIRMAN. Can either of you gentlemen state the cost of the Pennsylvania road as it now stands; the actual cost in money?

Mr. LEWIS. Not without looking at the report.

Mr. CASSATT. I can tell you how much was charged against it, but that does not represent the cost.

The CHAIRMAN. I do not understand the mode of keeping the account, but I want to ascertain.

Mr. CASSATT. The cost of the road between Philadelphia and Pittsburgh, including the equipment in all the shops, stations, and so on, stand on the books of the Company at \$42,437,859.68.

The CHAIRMAN. What is the distance?

Mr. CASSATT. Three hundred and fifty-five miles.

The CHAIRMAN. It stands on the books, you say?

Mr. CASSATT. That is, charged against capital account on the books, but of course there has been a great deal more money spent on it than that. The road is worth more than that to day, and it has cost more.

The CHAIRMAN. Why does it not stand on the books?

Mr. CASSATT. Because the road has been improved out of the earnings. Track-bridges, rolling stock, &c., have been greatly improved.

The CHAIRMAN. Is not that charged up to capital account?

Mr. CASSATT. No, sir; not all.

The CHAIRMAN. How is that charged; to maintenance?

Mr. CASSATT. We charge a portion of that to capital account, but for years past a great deal of construction work was done, and paid for out of earnings and charged to expense account.

The CHAIRMAN. What was the original issue of stock, if your report gives it?

Mr. LEWIS. The original issue of stock authorized was \$10,000,000.

The CHAIRMAN. What amount of bonds originally?

Mr. LEWIS. The original stock of \$10,000,000 authorized, was for the construction of the road from Harrisburgh to Pittsburgh.

The original or first issue of bonds was for \$5,000,000. The next or second issue of bonds was also for \$5,000,000, and covered what was then the Pennsylvania Railroad Company, namely, from Harrisburgh to Pittsburgh. The Pennsylvania Railroad Company purchased from the State of Pennsylvania what was known as the Main Line of Public Works, namely, the Pennsylvania Canal from Pittsburgh to Johnson, the inclined planes and railway over the Alleghany Mountains to Hollidaysburg, and the canal thence to Columbia, in Lancaster County, and the railway from Columbia to Philadelphia, for the price of \$7,000,000, which sum was a lien upon the said public works only, and payable in annual installments of \$460,000, bearing 5 per cent. interest. On the 1st July, 1867, the company executed the general mortgage for \$35,000,000, covering its entire line of railroad from Pittsburgh to Philadelphia, and out of the \$35,000,000 there was set apart the sum of \$16,329,457.98 to pay the following sums: First mortgage, \$9,800,000; second mortgage, \$4,904,000; amount due the State, \$6,444,617.98. The actual bonded indebtedness, December 31, 1872, is \$35,000,000, and by the treasurer's report on same date, the capital stock was \$35,000,000.

The CHAIRMAN. It is now from Philadelphia?

Mr. LEWIS. Yes, sir; by buying the State works, and leasing the Harrisburgh and Lancaster Railroad.

The CHAIRMAN. I understood Mr. Cassatt to say a moment ago that the amount charged to capital was \$42,000,000. I understand you now to say \$53,000,000?

Mr. LEWIS. No, sir; the amount charged on the books of the company against the cost of constructing the road and equipment is \$42,000,000, while the capital stock, July 1, 1873, is \$53,000,000, and the bonds \$35,000,000. That is \$88,000,000 in all. The remainder, \$46,000,000, is invested in various ways.

Mr. CASSATT. Page 41 of our report shows that, and shows how this surplus is invested in the bonds and stock of other companies controlled by the Pennsylvania Railroad.

The CHAIRMAN. How many issues of stock have there been of that road and when were they made?

Mr. LEWIS. There have been nine issues of capital stock under as many acts of the legislature of Pennsylvania.

The CHAIRMAN. Have you any means of stating accurately the

amounts received for each and all of those issues of stock by the company, and expended in the road ?

Mr. LEWIS. It is all recorded on the treasurer's books.

The CHAIRMAN. You have access to those and charge of them, have you not ?

Mr. LEWIS. No, sir ; I have not charge of the treasurer's books, but the list is as follows :

Issue under act April 13, 1846.....	\$10,000,000 00
Issue under act April 23, 1852.....	3,000,000 00
Issue under act May 6, 1852.....	1,000,000 00
Issue under act March 23, 1853.....	4,000,000 00
Issue under act May 2, 1855.....	2,000,000 00
Issue under act March 22, 1867.....	15,000,000 00
Issue under act December 29, 1869.....	17,000,500 00
Issue under act March 8, 1871.....	500,000 00
Issue under act March 8, 1871.....	350,000 00
	<hr/>
	53,350,000 00
Not yet issued.....	78,062 50
	<hr/>
Capital account, January 1, 1873.....	53,271,937 50

The CHAIRMAN. Without attempting to conceal the idea I am coming at, has there ever been any stock issued by your road, and, if so, how much, for which the face par value has not been paid ?

Mr. LEWIS. Every share of stock has been fully paid for in cash. There was a dividend made in 1864 of \$4,130,760 out of surplus earnings (profits) payable in capital stock, equal to 30 per cent. on the then outstanding capital of \$13,769,200. These surplus profits were from the previous accumulations of the company, and were represented by actual investments in good securities in the hands of the treasurer, and the profit and loss account was by this dividend debited with a corresponding amount of capital stock.

The CHAIRMAN. A portion of the money came from bonds ?

Mr. LEWIS. If you mean to pay this dividend, no, sir ; it all came from net earnings of the road.

The CHAIRMAN. And that was distributed as a dividend among the stockholders ?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. Have there ever been any other issues of that kind ?

Mr. LEWIS. Yes, sir. Out of surplus earnings there was one in 1867 of \$1,000,000, being 5 per cent. on the capital stock of that date, and again in 1868 of \$1,051,937.50, being 5 per cent. on the capital stock of that date, but all the other issues of stock have been regularly subscribed and paid for by the subscribers therefor. At same dates there were cash dividends of 3 per cent.

The CHAIRMAN. The capital stock is now how much ?

Mr. CASSATT. On the 1st of January it was \$53,000,000.

Mr. LEWIS. Since that there has been an issue of stock at the par value of \$50 per share to the stockholders.

The CHAIRMAN. Sold to the stockholders for the purpose of making other investments with ?

Mr. LEWIS. Yes, sir, and paid for in cash, to increase and improve the property and equipment of the company.

Mr. CASSATT. An analysis of this report, which I hand you, shows that there is no water in the stock. I think an examination of the statement on page 41 will show that very clearly ; the road and equipment has cost very much more than is charged against it, and is worth to-day

double the amount charged against it. A very brief examination of the company's property will convince any one conversant with railroad management of the correctness of this statement.

Mr. LEWIS. I will state that at the time the \$4,130,760 of surplus profits was distributed in stock, it was largely on account of very heavy pressure brought to bear by the stockholders, who thought that, as the road earned money, they should have some benefit from it. The line of argument they used was, that "we do not care if your road would sell for \$50,000,000 while it only cost \$25,000,000; that is no benefit to us; we want to sell now; we want to realize now." The direction of the company gave way to it just that much as to issue that amount.

The CHAIRMAN. Were those surplus earnings, over and above a certain percentage, divided among the stockholders and paid to the owners?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. What was that?

Mr. LEWIS. The usual dividends of the company have been 10 per cent. since November, 1868; prior to which they varied from 6 to 8 per cent. annually. They passed one dividend, I think, in November, 1857. The railroad during its construction, and until it was opened continuously from Harrisburgh to Pittsburgh, earned net revenues equal to 6 per cent. On its completion between these points as a single-track line, a balance was struck between the revenues and expenses, and then appeared a credit which was applied to the reduction of the cost of the roadway, in accordance with the terms of the charter of the company. If there had been a loss, they (the directors) were authorized to charge the deficiency to construction, so that the line when opened for use might start even.

The CHAIRMAN. When was that 30 per cent. issue?

Mr. LEWIS. In the year 1864.

The CHAIRMAN. What property has been purchased with this additional issue of stock and bonds over and above the \$42,000,000?

Mr. CASSATT. There are \$46,000,000 of property owned by the company, paid for out of the money realized from bonds and stock which have been issued.

The CHAIRMAN. What is the property purchased by the company for that \$46,000,000?

Mr. LEWIS. In answer I submit here a statement of the treasurer's account to January 1, 1873, as submitted to the stockholders at their annual meeting, held March 11, 1873, from which the information asked may be obtained.

To capital stock.....	\$53,271,937 50	By balance standing on books of the company for the construction of the railroad between Harrisburgh and Pittsburg, including branches to Indiana and Hollidaysburgh, (in all 276 miles,) also, for cost of stations, warehouses, shops, and shop machinery on the whole road from Philadelphia to Pittsburg.....	\$12,309,836 74
first-mortgage bonds due 1880.....	\$4,970,000 00	balance standing on books of the company for the purchase of the Philadelphia and Columbia Railroad.....	5,375,733 43
second-mortgage bonds due 1875.....	4,865,840 00	balance standing to debit of equipment of road, consisting of 723 locomotives, 336 passenger-cars, 136 baggage, mail, and express cars, 13,749 freight-cars, and 1,967 road-cars.....	11,154,535 49
lien of the State upon the public works between Philadelphia and Pittsburg, bearing 5 per cent. interest payable in annual installments of \$460,000, applicable first to the interest and the remainder to principal, original amount of which was \$7,500,000.....	5,584,689 98	cost of real estate of company and telegraph line.. extension of Pennsylvania Railroad to the Delaware River, including wharves and grain-elevator....	6,085,731 60
mortgages and ground-rents at 6 per cent. remaining on real estate purchased.....	161,009 32	Total amount charged to construction, equipment, and real estate accounts for the railroad between Philadelphia and Pittsburg..	\$42,437,859 68
bills payable.....		OTHER ASSETS.	
accounts payable, including dividends due to stockholders unpaid.....		By amount of bonds of railroad corporations.....	19,404,776 25
appraised value of securities owned by the United New Jersey Railroad and Canal Company, and transferred with the lease of the works of that company.....		amount of capital stock of railroad corporations.....	21,440,843 43
contingent fund.....		amount of bonds of municipal corporations and investments not otherwise enumerated.....	63,900 00
balance to credit of profit and loss.....		appraised value of securities owned by the United New Jersey Railroad and Canal Company, and transferred with the lease of the works of that company.....	4,065,225 25
		cost of bonds and stock in sinking-fund.....	2,433,433 35
		cost of bonds representing contingent fund.....	2,000,000 00
		amount of fuel and materials on hand for repairs to locomotives, cars, and maintenance of way on the Pennsylvania Railroad.....	2,456,178 99
		amount of fuel and materials on hand for repairs to locomotives, cars, and maintenance of way on the United Railroad of New Jersey division.....	891,590 11
		amount advanced to pay for fuel and materials on hand for repairs to locomotives, cars, and maintenance of way on the Philadelphia and Erie Railroad.....	507,829 84
		amount advanced to operate the Philadelphia and Erie Railroad.....	544,907 12
		amount of bills and accounts receivable and amount due from other roads.....	17,837,660 98
		balance in hands of agents.....	1,180,894 73
		balance in hands of treasurer.....	1,395,322 30
			116,658,824 03

The statement by the treasurer in the general account shows all of the transactions of the company outside of its operating details.

Mr. WINDOM. Does not the company receive dividends or profits from this property bought with this money—\$46,000,000—except that for repairs and fuel, &c.?

Mr. LEWIS. Yes, sir.

The CHAIRMAN. Do they not pay a dividend also on the \$46,000,000 of stock, or the additional stock, and interest on the additional bonds making up the \$46,000,000?

Mr. LEWIS. Yes, sir; they pay dividends on all the stock they issue.

The CHAIRMAN. So that, really, there is a double profit to the company growing out of that increase to the capital stock and bonds. They receive a profit from the property, and they also make a dividend on the increase of stock, and pay interest on the increase of bonds with which this property was bought.

Mr. LEWIS. I do not know that I exactly understand you. Of course, if they invested this money they obtained from stock and bonds profitably, they would derive an income from it which would go toward paying the interest on their own bonds or stock.

The CHAIRMAN. That goes to make up your receipts?

Mr. LEWIS. Yes, sir; it goes to make up the general income of the company by reducing interest account.

Mr. SHERMAN. I suppose the bonds of railroad corporations included in your assets are bonds of railroads that you have aided in constructing their works, &c.?

Mr. LEWIS. Yes, sir.

Mr. SHERMAN. Do you know whether, generally, the bonds and stock which you have purchased of this kind have been very profitable, or whether you have gained your profit by the improved business given to your road?

Mr. LEWIS. Some of these bonds are remunerative, and others are not at present. They all are getting into being remunerative. As a rule, after taking a road, it takes a considerable while to get the business up so that it will pay a profit over working expenses.

Mr. SHERMAN. Have these bonds been purchased from the earnings of the company from time to time?

Mr. LEWIS. They have been paid for out of money in the treasury, but it would be difficult to say what portion of the money was derived from earnings and what from the proceeds of stock and bonds sold.

Mr. SHERMAN. Is any portion of it made by accumulated earnings not divided?

Mr. LEWIS. That I could not answer definitely. It might or might not be. Any profits over and above the dividends would be more likely to go into the general improvement of the road. It is a very difficult matter in railroad business to decide absolutely many charges, whether they would be repairs or construction, or what amount of a charge should be charged to repairs and what to construction. Different railroads have different methods. Some railroads charge all they can to construction, while others charge as little as they well can and be on the safe side.

Mr. SHERMAN. Do not these \$42,000,000 include the whole of your construction account; is not that the whole cost of your road?

Mr. LEWIS. Yes, sir; construction and equipment account, as upon our treasurer's books; but over and above that large expenditures have been made upon the road, and equipments paid out of earnings.

Mr. SHERMAN. And the other assets are investments which you have made as a corporation in other railroad companies?

Mr. LEWIS. Yes, sir, including the working capital for leased lines, for cross-ties, iron, and other materials.

The CHAIRMAN. You spoke of an issue of stock and bonds since this report was made, did you not?

Mr. LEWIS. No, sir.

The CHAIRMAN. Has not the legislature of Pennsylvania authorized an additional issue of stock, and if so, how much, on your road?

Mr. LEWIS. They authorized us to increase the capital stock. Mr. Kneass, I think, can give you figures better than I can on that.

Mr. KNEASS. The company was authorized, in February, 1873, to increase its capital stock from time to time \$75,000,000.

The CHAIRMAN. Has any part of that stock been issued?

Mr. KNEASS. No, sir, no part of the last authorized increase has been issued, but out of stock authorized in 1872 there have been issues made since last annual report.

The CHAIRMAN. How much?

Mr. KNEASS. I think about \$13,000,000.

The CHAIRMAN. Has that been disposed of?

Mr. KNEASS. Yes, sir; it was issued, giving the stockholders the privilege of subscribing at par. That stock was taken mainly to be expended on the road in terminal facilities, to enable it to accommodate its increased and increasing business.

The CHAIRMAN. Taken at par?

Mr. KNEASS. Yes, sir.

Mr. DAVIS. That has been since the 1st of January; since this report was printed?

Mr. KNEASS. Yes, sir; it takes a great deal of money to provide for the increase of the business.

Mr. SHERMAN. Do you regulate tolls on canals?

Mr. KNEASS. No, sir.

Mr. SHERMAN. Do you know them?

Mr. KNEASS. I have very little knowledge of them.

Mr. SHERMAN. Who would know the tolls paid on the canals?

Mr. KNEASS. The president of the canal company, General Wistar.

Mr. SHERMAN. Is he in town?

Mr. KNEASS. No, sir, he is not here.

Mr. SHERMAN. You say the canals do not do any through business?

Mr. KNEASS. No, sir, excepting between here and Baltimore.

Mr. SHERMAN. But I speak of the interior canals of Pennsylvania.

Mr. CASSATT. They do none at all.

Mr. SHERMAN. My object in inquiring was to learn how far they affect you in enabling you to carry grain in competition with other lines.

Mr. CASSATT. None at all, sir.

The CHAIRMAN. What is the arrangement between your company and the sleeping-car company or companies?

Mr. CASSATT. They furnish the cars and we run them, not making them any charge for doing so, and they collect whatever charges they may for berths or seats.

The CHAIRMAN. They receive all the proceeds of the berths, and the benefit you derive is the use of the car?

Mr. CASSATT. Yes, sir, and the accommodation it affords the passengers, of course. They hire the porter and conductor of the car.

The CHAIRMAN. Do you regard that arrangement as beneficial to the company?

Mr. CASSATT. Well, yes, we think it is a fair one. We are owners in the sleeping-car stock; the Pennsylvania Railroad Company. I mean, is, as a company.

The CHAIRMAN. Not individual members?

Mr. CASSATT. No, sir: as a company. It owns stock representing about half of the value of the equipment on its lines; so that the Pennsylvania Railroad Company participates to the extent of one-half in all the profits earned on its own line by the running of these sleeping-cars. This we think is a better arrangement for the company than if it ran its own cars, as, with such an extended system of sleeping-car lines, running on many roads in different interests, the service can be better managed and more efficiently performed by a separate organization. The Pullman Palace-Car Company, too, own all, or nearly all, the patents on sleeping-cars: and it is also doubtful whether a railroad company could legally collect pay for the sleeping-car accommodations, when, as would frequently be the case, this charge, added to the passage fare, would exceed the limits fixed by law.

The CHAIRMAN (addressing the committee.) I find on pages 108 and 109 of this report a detailed statement of the expenses of the Pennsylvania Railroad and branches for the year ending December 31, as follows:

ACCOUNTING DEPARTMENT.—ANNUAL REPORT, 1872.—STATEMENT No. 3.

Earnings in detail of the Pennsylvania Railroad and branches for the year ending December 31.

Class.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
FREIGHT EARNINGS.													
From—													
Freight at stations, and													
tolls on individual													
cars.....	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
Miscellaneous.....	1,291,949 05	1,140,050 36	1,361,816 81	1,410,979 67	1,454,088 49	1,378,013 93	1,387,762 23	1,378,710 71	1,539,233 95	1,700,099 41	1,498,681 42	1,295,505 38	16,856,891 41
Total freight earnings.	12,306 66	2,317 43	10,225 96	5,542 47	16,434 98	4,862 68	9,095 95	1,421 49	5,463 82	11,667 05	6,607 72	11,406 60	97,392 81
	1,304,255 71	1,142,367 79	1,372,042 77	1,416,522 14	1,470,523 47	1,382,896 61	1,396,858 18	1,380,132 20	1,564,717 77	1,711,766 46	1,505,289 14	1,306,911 98	16,954,284 22
PASSENGER EARNINGS.													
From—													
First-class passengers.....	243,306 76	234,649 12	297,288 53	341,198 12	351,589 85	348,192 12	389,795 66	405,580 64	430,310 27	380,706 29	310,274 60	288,830 84	4,092,019 80
Emigrant passengers.....	5,902 62	6,585 22	14,823 15	32,355 15	40,807 05	27,765 02	94,379 92	18,349 88	20,384 88	91,963 70	17,395 98	10,972 51	240,005 08
Express.....	15,745 00	71,590 71	27,506 62	26,974 40	31,483 04	31,918 70	30,536 78	31,856 07	34,114 45	31,704 70	35,055 52	81,781 03	443,627 35
United States mails.....	12,463 49	12,353 56	12,353 56	12,403 52	12,353 54	13,624 11	12,701 41	12,601 47	12,601 48	12,701 43	12,601 46	16,215 75	134,914 78
Miscellaneous.....	3,885 57	23,541 26	8,577 67	6,186 21	7,497 57	5,816 91	8,904 20	5,627 08	6,066 39	10,633 52	5,501 65	9,175 16	106,013 02
Total passenger earnings.....	283,333 44	359,919 87	360,549 73	418,417 49	443,730 88	427,316 86	466,317 97	474,015 14	504,077 51	456,169 64	380,759 21	406,945 29	4,972,573 03
From rents.....	4,118 78	11,209 65	1,793 45	11,128 08	6,878 23	4,860 78	10,481 99	7,953 11	1,630 40	15,356 49	3,425 56	6,831 50	88,668 02
Total earnings from all sources.....	1,591,707 93	1,504,497 31	1,734,385 95	1,846,067 71	1,921,132 58	1,815,074 25	1,873,658 14	1,862,100 45	2,070,455 83	2,183,312 59	1,880,473 91	1,720,688 77	22,012,825 27

ACCOUNTING DEPARTMENT.—ANNUAL REPORT, 1872.—STATEMENT No. 4.
Expenses in detail of the Pennsylvania Railroad and branches for the year ending December 31.

Heads of accounts,	Conducting transportation.		Motive-power.		Maintenance of cars.		Maintenance of way.		General expenses.		Totals.
	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	
Advertising	\$25,968 42	\$127 07							\$3,484 71	\$10,454 11	\$40,034 31
Agents	35,303 69	74,180 86							2,812 29	8,436 86	109,574 55
Attendants											11,249 15
Baggage-masters	58,981 94										58,981 94
Ballast											312,116 21
Brakemen	79,334 84	768,969 71									848,354 55
Bridges, repairs of											302,730 84
Car furniture and fixtures	42,534 70	44,795 47			\$1,210 06	\$21,630 28					87,380 17
Car shops and sheds, repairs of											38,840 34
Car service	3,732 27	182,324 94									186,107 21
Cars, cleaning and inspecting	58,904 90	74,349 72									134,254 62
Cars, repairs of ballast and wood					3,296 84	9,880 57					13,187 41
Cars, repairs of freight						832,965 03					832,965 03
Cars, repairs of passenger and baggage					390,601 57						390,601 57
Cars, road and hand											12,229 36
Chairs	41,888 83	187,474 63									75,671 48
Clerks											343,879 17
Coal			\$110,228 01	\$662,047 05					26,810 74	80,432 25	772,275 06
Conductors	79,832 42	297,484 37									377,316 79
Cotton-waste			5,312 12	21,100 43							26,412 55
Cross-ties											96,412 55
Dispatchers	19,862 44	74,639 53									94,501 97
Drawbacks and overcharges	2,469 67	440,091 00									442,560 76
Engineers and firemen			161,114 47	689,306 61							850,421 08
Engine-houses, machine-shops, and turn-tables, repairs of											81,440 69
Expenses of stations, except labor	6,004 75	19,615 95	20,360 14	61,080 55							25,620 70
Expenses of grain-elevator		1,285 02									1,285 02
Expenses on property											14,594 97
Foreign agencies	135,692 12	127,749 77									263,441 89
Foreman and watch-houses, repairs of											31,318 09
Frogs											42,365 94
Fuel and light									1,307 42	3,922 24	5,229 66
Fuel at stations	8,432 06	3,863 50									12,295 56
Fuel for cars	9,409 92										9,409 92
Fuel for stoves at engine-houses and shops			4,840 50	14,521 62							19,810 89

ACCOUNTING DEPARTMENT.—ANNUAL REPORT, 1872.—STATEMENT No. 4—Continued.
Expenses in detail of the Pennsylvania Railroad and branches, &c.—Continued.

Heads of accounts.	Conducting transportation.		Motive-power.		Maintenance of cars.		Maintenance of way.		General expenses.		Totals.
	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	Passenger.	Freight.	
Incidentals.....	\$28,292 29	\$59,952 86	\$16,078 45	\$46,235 62	\$1,004 11	\$2,532 58	\$2,310 05	\$6,330 21	\$13,312 14	\$39,936 51	\$218,885 82
Iron rails.....							255,384 18	765,972 55			1,021,296 73
Labor at stations.....	28,919 51	166,270 88	66,393 53	199,180 76							215,190 39
Laborers.....											265,574 31
Light at stations.....	18,648 77	19,358 82									31,007 29
Light for cars.....	11,166 80	7,921 20									18,388 00
Locomotive furniture and fixtures.....			15,004 21	47,982 86							60,377 09
Locomotives, repairs of.....			177,345 55	963,267 45							1,140,613 00
Loss and damage.....											31,296 62
Loss from injuries to individuals.....	31,296 62	39,617 19									59,617 19
Loss from injuries to property.....											31,296 62
Mail expenses.....	5,432 86										5,432 86
Office expenses.....			9,487 98	39,685 68			405 45	1,216 46	5,347 94	16,043 77	21,391 71
Oil.....											3,432 86
Oil, tallow, sponge, wool, &c.....	19,804 50	55,756 72									49,173 87
Powerton estate.....											77,183 13
Real estate in Philadelphia.....											8 00
Repaired, repairs of—"labor" and "materials".....											638 08
Salaries of president and other general officers.....							41,742 78	135,247 16			166,989 94
Snow and ice, removing.....									24,455 38	73,366 22	97,821 60
Spikes.....							8,824 47	26,473 44			35,297 91
Stationery and printing.....	28,247 95	87,283 15	4,066 10	12,258 35			8,943 91	26,831 80			35,775 71
Stations, repairs of, rent and furniture.....	175,570 82	141,985 44					985 30	2,955 86	2,484 84	7,454 45	143,798 00
Superintendence and supervisors.....	8,832 80	26,438 71									317,566 38
Switches.....							7,973 01	23,919 11			31,143 63
Switchmen.....			12,702 71	38,108 15			7,785 36	23,349 79			31,133 03
State revenue tax.....	36,857 42	122,938 04									50,810 86
Tallow.....			6,602 31	31,367 73							159,765 46
Tax on deposits.....	11,610 56	54,275 85									37,970 04
Tax, United States.....									650 00	1,950 00	65,886 41
Tax, tonnage, (State).....											2,600 00
Taxes on engine-houses and shops.....			8,257 41	24,772 27							90,996 33
Taxes on real estate for road.....											33,029 68
Teaming.....							2,887 96	8,663 95	1,465 37	4,396 10	17,413 38
Telegraph expenses.....	29,608 44	94,593 30									94,593 30
Telegraph, repairs of.....		88,051 64									117,660 08
Tools and machinery, repairs of.....			18,108 10	54,324 43							39,887 22
					9,004 93	27,014 76					153,461 96

Tolls, Bald Eagle Valley Railroad.....	37,200 66	53,307 65								90,508 34
Tolls, East Brandywine and Waynes- burg Railroad.....	3,650 47	3,595 26								7,245 73
Tolls, Philadelphia City Railroad.....		7,456 17								7,456 17
Tolls, Philadelphia, Wilmington and Baltimore Railroad.....		14,716 38								14,716 38
Tolls, Tyone and Clearfield Railroad.....	5,528 39	94,150 26								99,678 65
Tolls, Western Pennsylvania Railroad.....	95,884 71	176,884 84								272,719 55
Track, labor repairing.....										653,152 14
Watchmen.....			5,800 74	17,402 36						180,476 47
Water, wood, and coal stations, re- pairs of.....			13,773 51	41,320 72						55,094 23
Wood and coal stations, ex- penses of.....			22,871 19	68,613 69						91,484 88
Wood and labor preparing.....			20,045 61	96,567 18						116,612 79
Tolls, Junction Railroad.....	8 75	33,503 20								33,511 95
Tolls, Lewisburg Center and Spruce Creek Railroad.....	4,035 79									4,035 79
Tolls, Lewisburg Bridge Company.....	1,549 05	2,620 69								4,169 74
Tolls, Danville, Hazleton and Wilkes- barre Railroad.....		2,335 68								2,335 68
Wharves and landings, repairs of.....						275 15				1,100 62
Total.....	1,191,730 13	3,773,202 62	698,502 64	3,128,443 70	411,230 00	894,669 83	834,426 33	2,503,298 36	82,292 35	246,877 07
										13,764,673 09

RECAPITULATION.

	Passenger.	Freight.	Totals.
conducting transportation.....	\$1,191,730 13	\$2,732,202 62	\$4,904,932 75
Motive-power.....	698,502 64	3,128,443 76	3,826,946 40
Maintenance of cars.....	411,230 00	894,669 83	1,305,899 83
Maintenance of way.....	834,426 33	2,503,298 36	3,337,724 69
General expenses.....	82,292 35	246,877 07	329,169 42
Totals.....	3,218,181 45	10,546,491 64	13,764,673 09

Mr. CHAPIN, president of the Boston and Albany Railroad Company, examined.

By the CHAIRMAN :

Question. Will you please state your connection with the New York Central Railroad Company ?

Answer. We have a through arrangement with them ; we are jointly interested with them in three lines of through-cars, the Red, White, and Blue Lines. We have also business arrangements as to passengers and freights ; freights to and from the line of their road. Freights from beyond their road to the sea-board and over our road or east of us are mainly governed by the rules governing the other lines.

Q. Have you ever made any estimate as to the cost per ton per mile over your road ?

A. Yes, sir ; I have made a good many figures in that connection.

Q. What do you make it ?

A. Our whole cost, taking passengers and freight, is a little more than a cent and a half a mile.

Q. I meant to include in my question only freight.

A. I suppose it would not vary much from a cent and a quarter.

Q. Of the actual cost ?

A. The actual cost.

Q. Yours is a road of high grade ?

A. Yes, sir ; we have 80-foot grades, and our fuel costs us a good deal more than the western routes. We formerly had cheap wood in our mountain divisions, but coal has become a substitute for it, and now our coal costs us over \$8.

Mr. SHERMAN. It costs the Pennsylvania Central only \$2.

By the CHAIRMAN :

Q. What are your average charges per ton per mile on freight ?

A. Our freight average last year I think was $2\frac{1}{16}$ cents or $2\frac{1}{17}$.

Q. What is your judgment as to the relative capacity of canals conducted as the Erie Canal, or I should say, rather, of the size and dimensions of the Erie Canal, and railroads, economically considered ? Which is the cheapest ?

Q. I think there are so many questions to come into that, that hardly any answer would be satisfactory. That a canal could move pig-iron or iron-ores in large quantities something less than a railroad can I have not any doubt ; but when you come to the question of grain, the time and the better condition that the grain is delivered in is an element, and I have no doubt there is true economy in carrying it in the cars, even for export, because I believe grain can be put aboard of a vessel here for Liverpool in as good condition from cars as it can be taken aboard of a canal-boat at Buffalo from a vessel, to come from there here, and there are ten or twelve days at certain seasons of the year that grain is likely to heat.

Q. Is there any difference in the price of grain brought by water, the Erie Canal, and by railroad to New York ?

A. That I do not know. We consider it very much better from the cars. A car-load is 400 bushels. It is surrounded by fresh air and not by water.

Q. What proportion of the grain passing over your road to the East comes by canal and what proportion by rail ?

A. Next to nothing comes by canal now. We have an elevator at Albany, but it is out of use almost the entire time.

Q. All of the grain that you transport to Boston or the New England towns comes through on these freight-lines?

A. Almost wholly, sir.

Q. Is your grain that you receive usually shipped from Chicago or from some of these further western points?

A. Chicago is the largest point, I think, and a large amount from Toledo; but there is a great deal taken from the interior, all over Indiana, Illinois, and Michigan. Cars are loaded at small stations.

By Mr. SHERMAN:

Q. How much is charged from Toledo to Boston on wheat per bushel?

A. I cannot give you the exact price, sir. Not far from thirty cents.

By the CHAIRMAN:

Q. We have a statement here from Mr. Gray, at Chicago, that adding 5 cents to the New York rates would give us the Boston rates; is that as you understand?

A. Yes, sir; 5 cents a hundred pounds, not 5 cents a bushel.

By Mr. SHERMAN:

Q. Is your purchase of wheat generally in flour or wheat?

A. We carry some wheat in the barrel, but mostly flour. We carry corn and oats more largely than any other grain.

Q. Where is the flour made, in the Toledo market?

A. It is made in the interior; all over. There is a good deal of flour brought from Saint Louis, manufactured there.

Q. How much cheaper is it to carry a barrel of flour than five bushels of wheat? Do you carry it at the same rate per pound?

A. No, sir; the flour is carried at a little less rate. There is one advantage in carrying it in the grain, that the shorts, the bran, is worth more East. We carry a great deal of that separate.

By Mr. DAVIS:

Q. Then the barrel is worth more East than it is West?

A. No, sir; I do not think the barrel is worth any more than it costs there, but it is in convenient form for handling. The barrel would hardly sell for as much as it cost, but it would come pretty near it if it was taken care of, and could be used for putting up various things.

By the CHAIRMAN:

Q. I understood Mr. Hayes to say that a cargo or car-load of wheat put upon one of these freight-lines or freight-cars belonging to the freight-line in the interior, Iowa for instance, passing through to Boston, has no charge upon it whatever, except freight charge, until it reaches Boston?

A. Yes, sir; there is no intermediate charge.

Q. The farmer, for instance, in Des Moines, puts his wheat upon one of your cars; it passes through to Boston with nothing but freight charge?

A. Nothing but freight.

Q. A car-load of grain starting from Des Moines pays from Des Moines to Chicago only the pro rata rate?

A. I am not able to answer that question.

The CHAIRMAN (to Mr. Potts.) Suppose you start upon your line a car loaded with wheat at one of the interior points, say Des Moines or Omaha, does it not pay more from Omaha to Chicago per mile than from Chicago to New York?

Mr. POTTS. It pays just the same, and it pays rather less per mile than freight originating in Chicago would pay.

The CHAIRMAN. Is that true upon all the roads that your cars run over?

Mr. POTTS. All of them. We bring freight also from Saint Paul in the same manner.

The CHAIRMAN. I understand you to say that wherever your freight-lines are used, it is no more expensive transporting west of Chicago to Chicago than it is this side of Chicago?

Mr. POTTS. Not from a competitive point, but the charge from a local station up to the nearest competitive point is another matter.

The CHAIRMAN. That is not true, then, of all the points along the line you run on, but only at competitive points?

Mr. POTTS. Yes, sir.

Mr. DAVIS (to Mr. Cassatt.) We want to get at the capacity, among other things, of a double-track road, and, as you are the manager of one of the leading double-track roads of the country, I would like to ask you how many freight-trains, in your judgment, can pass safely over a double-track road, any given point, for 24 hours?

Mr. CASSATT. We run from Columbia East frequently sixty trains a day in each direction, they being of twenty-two cars each. The grades are heavy, 40 feet to the mile. I think you could move one hundred trains a day in each direction on a double-track road. You might exceed this at times, but I should consider it good work to move that number as an average.

Mr. DAVIS. How many minutes apart would you run the trains, and would you run them in convoys?

Mr. CASSATT. I would run them in convoys or schedules, as we call them, running the different trains on one schedule five minutes apart, and then leave as much time as possible between the schedules to repair the track.

Mr. DAVIS. Is your rule five minutes now?

Mr. CASSATT. Five minutes, yes, sir; freight-trains running on the same schedule are allowed to follow each other five minutes apart.

On motion of Mr. Conkling, the committee adjourned to meet at 10 o'clock to-morrow morning.

NEW YORK, *September 12, 1873.*

The committee met at 10 a. m., pursuant to adjournment.

Maj. ROBERT TAYLOR: I did not know but what it might be a matter of interest to this committee to learn how the locks of our present canals could be very largely lengthened; that is, their chamber without the necessity of lengthening the side-walls, and in case of any new canals that should be made whereby the same improvement could be used that would save the necessity of making the side-walls of a lock some hundred feet longer than there was any necessity for, by using the proper style of gates. This may not be a matter at all within the province of this committee.

The CHAIRMAN. It is a matter of engineering, perhaps, technically.

Mr. TAYLOR. I thought I would call here and mention this circumstance.

Mr. SHERMAN. That would be a subject probably for the consideration of the committee of the legislature of New York.

HORACE H. DAY, of the Niagara Ship-Canal, American side:

Mr. Chairman: In the few minutes assigned to me in which to make my statement I propose to confine myself strictly to the subject. To do full justice to this whole subject would take me two hours, probably. It is known to this committee that I have for a long time identified myself with efforts to promote the Niagara Ship Canal, and I may say have in various ways expended more time and money than perhaps any other person in the country. I have long foreseen that there was no other way by which to meet the just demands of both East and West, and entirely agree with our present Chief Magistrate, whose repeated recommendations in respect to this and other water-ways will stand the test of time, and if he can carry them through during his present term place the nation under even greater obligations for arresting greater calamities than was in the contest which overthrew Southern slavery. It is settled beyond all manner of doubt that water-conveyances are the cheapest. All else has been tried in vain. The war drew the country together, but to-day sectional interests are again rising, and placing the nation in far greater danger than it was from the old systems and institution of the South. Monopolies and anarchies are the same; while the latter was confined to family and blood, the former is a wider spread power, and far more to be feared. It may be regarded as contagious; building up hatred, engendering malice and spite, which has already, and will more effectually resort to political strategy to build up and extend its blighting influence far and wide, bearing down, depressing, and impoverishing one part of the country, while it fosters and protects, through its injustice, another; shutting out man from his fellow man, turning back the rushing tide of God's great ocean of commerce, placing the iron hand of injustice on the mouths of the poor, and robbing the laborer of his hard-earned bread, compelling idleness to revel in the waste which monopoly creates, and obstinacy and tyranny hold, for the selfishness of the few who close the "rings" and make the "corners" upon and in which the nation's best interests are sacrificed, *ad libitum*, as they our lords and masters *will*. All else had been tried. Cotton was not and could not be king, and usurp the power in one-half the nation; sugar, rice, and tobacco claimed their part and portion in the channels of commerce, and all found a place and a way to reach us. Then came the louder call from all the world for bread, for corn, and other food-products, and what was the answer?

The politicians and monopolists saw that all the world must have what they asked for, and their opportunity was in the demand for bread. How have these monopolists and politicians expressed themselves? Their late actions and the result certainly speak plainer than can I. Credit Mobilier, and numerous others—lesser in the single, yet greater in the aggregate—certainly speaks for itself. All of these things, although passed away, have become the landmarks and foundation to enable us to make a more certain cord to bind us together as a nation—humane, wise, and just, and, necessarily, prosperous. These great water-ways, to make cheap transportation sure, beyond the power of avarice to control, point the only safe way. At least three great avenues from the sea to the Mississippi valley should be undertaken now—one through the northern lakes, the Saint Lawrence, and Champlain to New York, one through Virginia, and one still further south.

The double-track railroad, to be built and owned by the Government, and used by all who might wish to run their cars upon it, would, of course, be desirable, but ten such roads would fail of one great object—a steady foreign market for our surplus products. If this nation relies

upon any kind of railroad, Canada, with British capital, will perform the service cheaper by water through the Saint Lawrence and Montreal, and to compete with this route, and keep the trade in the United States, we will, after all, as I have said, be compelled to resort to the cheap water-transportation. There is no shadow of a doubt of it in my mind. Looking to the absolute necessity of the Niagara Ship Canal, I have studied how to cheapen the cost of the structure, and shorten the time, and have arrived at a perfect system by which a ship of 1,200 tons can pass from navigable water above the falls to navigable water at Lewiston below the falls, within one hour, allowing fifteen minutes at the elevator, where one vessel would pass each way in the same time and by one operation.

By the aid of compressed air the entire work of excavation of the rocky bed of the canal on the line of the Government survey, and by the shortest route, can be accomplished with great saving, as the falling water of the Niagara itself will furnish all the power to do the work, and if the United States is willing to donate \$4,000,000 to a private company, I can furnish satisfactory assurance that a canal and elevator, capable of passing not less than fifty vessels of 1,200 ton carrying capacity each way every twenty-four hours, can be completed in two years, and delivered to the Government by the owners any time within ten years, at less than \$8,000,000. The elevator capacity can be increased at will to any desirable extent, even to passing 200,000 tons of merchandise a day, if so much should be required.

I have brought with me some sketches which will enable me very briefly to explain the mode by which this result is to be accomplished, and from an inspection of which you will see its entire probability, and, by the aid of engineers whom you may call, for the entire certainty of success. I have myself consulted engineers of eminence and know their opinions well. I have studied this matter a long time myself, and can satisfy the country, if they will make the investigations, that the plan I propose is entirely feasible, profitable, and worthy of the consideration of the Government and the people. I hold in my hand, and would be glad to place in that of the committee, a sketch which I will be glad to explain.

(Copies of the diagram referred to were placed in the hands of the committee by Mr. Day.)

The canal will start, on my plan, about three miles above Niagara Falls, and cross by the straightest line possible outside of the village of Suspension Bridge, and, following the old Government survey, strike the river at Lewiston Heights, five and three-quarters miles long. There is only one point at which lockage or lifting will be requisite, and that is at Lewiston, on the American side, as you will all remember, opposite the monument. At that point, perhaps, as the last and best of numerous plans which I have submitted to the consideration of engineers and the people, my last plan and that plan, in its best expression, means to draw the ship up sideways in an iron box, corresponding to a canal-lock, giving the bearings numerous places to support. I published this as the extreme expression of the plan I had in view, to show that it was possible to meet the utmost objection and raise the ship perpendicularly by suitable mechanism. Enough weights suspended on each side of that canal-lock by suitable steel cables will raise and lower that ship at the will of the operator.

MR. CONKLING. So this is to be by mechanical-power, and not by hydraulic-power?

MR. DAY. Oh, of course, hydraulic-power will have to be used; it is

there in abundance. The sketch in my hand, designed to illustrate how a train of cars may be drawn up a hill, avoiding the necessity of cutting through a tunnel, will at the same time illustrate the method of my lock. The canal-lock in that arrangement stands on a wedge-formed camel, so that the water is level in the lock, and the vessel is level, and thus it is drawn up the incline that we find at Lewiston. Five hundred or 750 feet would be the entire length. Any engineer will admit that there are no mechanical forces which amount to engineering difficulties in doing that. The sketch shows that we can draw it up perpendicularly.

Mr. DAVIS. What is the elevation there?

Mr. DAY. Three hundred and forty feet, perpendicular.

Mr. CONKLING. And on the slant 700?

Mr. DAY. Yes, sir. Vessels would come up at Lewiston, and pass into this lock at the end of it; the gate is closed; water is in it—of course, the larger the vessel the smaller the water—and are drawn up in that way. Two of them may be operated at the same time, one to let down the vessel and the other to lift it. This sketch illustrates a single lock. Two of these, one counterbalancing the other, will be the course adopted. Now, by the aid of the water-power of Niagara Falls, through compressed air, and the machinery for cutting and drilling rock and hoisting up, known to all engineers to-day, it will make unnecessary a large expenditure for the labor of men. The cutting out of the rock at this point will also be done by compressed air and by the water-power of Niagara Falls. The cost, when investigated by engineers, will be found to be so very much more than that hitherto proposed and considered by the country that it will startle. In connection with this subject, some ten years ago, I caused a partial survey to be made by engineers, who occupied some two months and a half of their time for my benefit, to learn if I could get out of Lake Ontario into Lake Champlain, and thence through to New York. We found the elevation between Lake Champlain and Lake Ontario, or the river Saint Lawrence below Ogdensburgh, to be over 1,100 feet on the American side of the line. The canal at that time would have cost \$12,000,000 to open communication for a 1,200-ton ship from the Saint Lawrence to Lake Champlain. We examined a route just north of the line dipping into Canada, and found the difference of level there not over 40 feet, and the cost \$4,000,000. If, in a treaty with Canada, we could provide for the use of so much of their territory as to make that line, we could then bring the produce of the great West down to the lower end of Lake Ontario with these two expenditures, the people paying \$4,000,000 for this enterprise, with the privilege of having it back any time within ten years, and the \$4,000,000 more from the Saint Lawrence to Lake Champlain would leave the engineers of New York to complete the route from Whitehall to navigation on the Hudson River. I have followed up this subject. I have made many devices to overcome these objections, and have some three or four matured plans. I, myself, like this plan. It is quick; fifteen minutes would be ample for raising one and lowering another ship.

Mr. SHERMAN. Do you mean this vertical plan or the inclined plane?

Mr. DAY. Either one of them. They would both come entirely within the range of fifteen minutes. Time is so important. If a vessel can steam from Buffalo directly to this elevator without any obstruction whatever, then I assert, and I have no fear of contradiction, that even, if we have to tow a vessel into the canal, we can pass it from the Niagara

River above the falls to the navigable waters of Niagara River below the falls at Lewiston within the period of one hour.

I believe experience has demonstrated that the time would be something in the neighborhood of twenty-four hours, average working, through the Welland Canal. Now a fair value of a ship 1,200 tons for twenty-four hours is somewhere from three to four or five hundred dollars; hence, every vessel can save that much. There are other considerations which will commend this system to the West and statesmen and to the great agricultural West. We can at that point convert the grain, by the aid of the extensive water-power there, into flour, to be raised out of the ship by the water-power of Niagara Falls. It can be then lowered into the ship by the same water-power by the aid of compressed air, and it may that within two or three days of the market of New York City. I see that your time is about to be occupied by others; I shall be happy to answer any questions.

Mr. SHERMAN. Have you got the basis of your estimated cost?

Mr. DAY. I have not it here in detail. Parties of wealth and responsibility are willing to unite with me in this proposition, and probably will in the course of the coming session of Congress, and I would like a full canvass of the enterprise.

The CHAIRMAN. The committee will take the papers you have presented and give them a careful examination, and if there are any questions we may wish to ask you afterward, we will address you a communication on the subject. Several gentlemen are now present whom we desire to hear this morning, and, as we can probably get this information from you by such means as well as any other, we will do so.

Mr. SHERMAN. If you can send a statement of the elements of cost of this canal, it would be well enough for you to do so, if you can make it out conveniently, giving the distance, excavation, and all the elements of cost as far as you can. Do you know the elevation of the inclined plane of the canal at Newark, N. J.?

Mr. DAY. About 85 feet is my recollection. Mr. E. F. Johnson, an eminent engineer, assisted me in procuring some of these plans, and they had his entire indorsement. I have numerous letters from him which I could, perhaps, furnish, as he is now deceased, which could prove that, and I have also had the opinion of other very eminent engineers, and on that question I do not think there is any possible doubt.

ISRAEL P. HATCH, of Buffalo:

All modern schemes for cheapening transportation in this country are based upon calculations predicated upon the inability of the Erie Canal to transport the products of the West to tide-water, and the fallacy that its maximum capacity has been reached. Estimating its lockages (the only test of capacity) at ten minutes, with 220 days as the season of navigation, and the enlargement of the canal completed with double locks, 56 feet bottom, 7 feet deep, and 70 feet wide, 250,000 of wheat, or 8,000,000 of tons, can be moved over it in one season. The log of the steamer *Diven*, contending for the prize, showed the lockages to be five minutes. The above amount is twice that of grain ever exported from Chicago, Du Luth, Milwaukee, Detroit, and Toledo in any one year. The entire tonnage of the Erie Canal last year was 6,673,370. This is about a quarter of the tonnage moved over all the canals, rivers, and railways of this country. And the eastward-bound tonnage over the Erie Canal equals one-half of the entire eastern-bound tonnage carried by all methods of transportation. The Erie Canal accomplishes all this in six months, while the railways work all the year. The New York

Times said the other day, as long as our double locks were not completed, we only had a single-lock canal. Cheap transportation over Erie Canal. It is believed by our most experienced men interested in lake navigation, that by the introduction of the steam-barge system, same as upon the Mississippi River, and which is now in successful operation upon the lakes, will reduce freight from Chicago to Buffalo in another year to three cents. In past years it has often been carried at that price. With the increase of upward-bound freight there must be a corresponding decrease in the cost of transportation of return cargoes. A reduction in elevating charges at Buffalo must necessarily follow. They have been reduced already to one cent per bushel.

When the amendment to the constitution, or funding bill, which passed our legislature last winter, shall be ratified by the people next winter at a special election, as provided for in the constitution, in the same way as the amendment for the enlargement of 1854, and the capacity of the Erie Canal is brought up to the legal standard of 1835, now called the enlargement of 1854, and all these improvements are in a progressive state, no one would estimate the cost of transportation over Erie Canal to the city of New York from Buffalo over six cents, as the canal board, under the amendment, will be prohibited from levying any more toll than is necessary for the "expenses of collection, superintendence, and keeping the canals in repair," and a small charge for sinking fund to pay off canal debt. Under this amendment the interests of western producers, as well as eastern consumers, will be fully protected and guaranteed.

Mr. SHERMAN. You do not take the tonnage of the railways?

Mr. HATCH. Yes, sir.

Mr. SHERMAN. But not the steamboats?

Mr. HATCH. No, sir; I suppose that would not be included.

Mr. CONKLING. You talk of artificial channels?

Mr. HATCH. All artificial channels.

Mr. SHERMAN. In your written statement you made it a little broader, "all of the modes of transportation."

Mr. HATCH. My impression now is that it includes all, without going back to examine particularly.

Mr. CONKLING. Your statement is, "all other methods of transportation?"

Mr. HATCH. Yes, sir; of transportation from the East to the West.

Mr. CONKLING. You did not say that?

Mr. HATCH. It should be in that way. Perhaps my statement was too hastily gotten up.

L. H. DUNAN, auditor-general of the Erie Railroad Company.

Mr. CHAIRMAN: I am present here to represent the Erie Road. At the same time I would say that, if it is at all practicable, I should like to have the committee hear from the Erie Road through Mr. Blanchard, our second vice-president, who we expect here to-night or to-morrow night. If the committee propose to hold any future session in the city, I should like to have them accord the privilege to the Erie Road of hearing from it through him.

The CHAIRMAN. Possibly we can hear him to-morrow, as we have a session then.

Mr. CONKLING. What is the likelihood of his being here to-night rather than to-morrow night?

Mr. DUNAN. If he got away from Buffalo he will be here to-night or to-morrow morning. He can leave Buffalo at 2 o'clock and reach here

to-morrow morning. In his absence I shall be pleased to answer any questions that the committee may desire to put relative to our organization and workings, or if there is anything now that they would like to know, I shall be happy to answer if I am able. This inquiry more properly tends toward obtaining information of the operations controlled by our second and third vice-presidents, both of whom are absent from the city. The third vice-president will certainly not be here until after you have gone on your trip. With reference to our fast-freight lines, and expenses of freighting, we can probably give you as much information as any one.

The examination was postponed.

NEW YORK, *September 13, 1873.*

The committee met pursuant to adjournment.

J. D. HAYES, general manager Blue Line, fast-freight, (recalled at his own request.)

MR. CHAIRMAN: I wish to take up a few of the threads of the discussion that Mr. Worcester left out, and a few that I left out myself in my statement the other day, and give little more detailed information with regard to the operation of the lines.

The question was put to you yesterday, why these lines were colored, why the cars were treated differently from cars known as common cars belonging to the same road. That is for the purpose, during the busy time, of furnishing the West with the cars, instead of their being used by the New York Central, or any eastern road in a local business to the disadvantage of the West. Therefore, by agreement, these lines are painted a particular color, and put in and turned over to the general management. By the record-book of the movement of these cars, we know every day between what points those cars are from day to day. If we find that a blue car is unreasonably detained on the New York Central Road to the detriment of a western shipper, although the car belongs to the New York Central Road, and is under their control by reason of its ownership, they have no right by reason of their agreement to take that car and appropriate it for their own local business, no matter what their necessities are. Each furnishes its proper quota to do the business of the West, and to place the West on a fair footing with eastern men in respect to distribution of property.

MR. DAVIS. Who directs where the destination of the car is to be?

MR. HAYES. That is directed by the manager when it is possible for him to do so, but generally by the roads with which the cars are at the time, in proportion to the demand. For instance, suppose fifty cars are required at Peoria, and they have not the cars at Chicago to send there, I would be asked for fifty cars for Peoria, and they would be sent there; but if we had fifty cars for Chicago and fifty at Peoria asked for, and had but fifty to send to both places, they would receive as near as possible the proportion of the cars in proportion to the magnitude of the business, so that the *pro rata* system of supply and demand would be as nearly balanced as it would be possible to do so under such an arrangement.

MR. DAVIS. Who makes the rate of freight of your particular line?

MR. HAYES. That I answered the other day. It is made by the western freight agents from the point that the property starts from; that is, from the competing point.

Mr. DAVIS. The Chicago people.

Mr. HAYES. If it is from Chicago; if it is from Peoria they make it from Peoria. Saint Louis the same.

The local as compared with the through rates was a matter that was left out. Much has been said with regard to the extraordinary charge on local business as compared with the through-business, and a very great popular error has grown out of the discussion of that question much to the injury of railways, and of no benefit to the consumer or producer. If a car-load of property has to be received at a local station, the rule governing common carriers is that they are liable for the property from the time they receive it until it has reached its destination. Therefore, the cost of handling that into store and out again into the cars is just as great to run five miles as it is to run five hundred miles, or one thousand.

Suppose, for instance, that we receive a car-load of grain to haul fifty miles, and put it at a reasonable rate, the cost of handling that property could not be less than 20 cents per ton. There would be \$2. If that property has to be unloaded to go into another company's car at the terminus of its road, at the end of fifty miles, the cost of unloading it is \$2 more. The cost of an engine to go into switch and take that is spread over the entire train that is waiting. Therefore, a local-freight train to run one hundred miles in a day accomplishes less work than a through-freight train does to run three hundred miles in the same time. Therefore, if you were to apply, say, the one cent per ton per mile of the through-business to the one cent per ton per mile for the local business, and deduct your terminal for the receiving and discharging, which is \$4, you have \$1 left as the proceeds of transportation for fifty miles. You will see at once that that could not possibly be done. That is out of the nature of things that it should be done. It is unreasonable to expect it to be done. Therefore, all local freight must, of necessity, bear a much larger proportion of cost per ton per mile than through-freight drawn in full trains over long distances, and it is for the purpose of reducing these expenses to the consumer as well as to the producer, and that railways may get something out of a very low rate of freight, that this organization is effected. The railway companies get a certain amount. The board of trade of Peoria, not touching the lake interest at all, but down into the interior, as a fair sample of the percentage of all those towns, and what the farmers realize, and what the transportation companies do, report:

No. 2 white, and No. 1 red wheat, as reported by the board of trade at Peoria, as sold for cash:

From March 1 to 31, 1872, the prices ranged from \$1.60 to \$1.68; from April 6 to 30, \$1.68 to \$2; from May 4 to 31, from \$2 to \$2.25 per bushel. Then prices fell off some on account of new crop prospects. Could there be any want of facilities at Peoria to move the crops to the sea-board, when wheat would bring such prices there, for the purpose of being sent to the sea-board? Corn sold there from May 4 to June 15 at a range in price from 40 cents to 45 cents per-bushel; mixed oats from 36 cents to 42 cents.

There was moved *by rail* from Peoria for 1872, 432,353 tons. Then the board of trade report:

In this, the increase from year to year is apparent, and an increase in the movement of freight implies an increase in the means of transportation. And the proof is in the above statement that the railroad corporations and transportation companies *have not neglected the business of this city.*

The enlargement of the railroad facilities for the handling of freights has been con-

tinuous during the year. The present capacity for transportation would be doubled, provided sufficient storage room existed at the markets to which western products are shipped. Cars could then be discharged upon arrival, and returned, laden or unladen, for more freight. But this *storage capacity does not exist*; and cars loaded with grain, especially corn and oats, at points in the West, and shipped to points in the East, remain, frequently, *from seven to forty-five days from the time of arrival before being discharged*. In eastern markets, blockades are common; and lines of railroads leading to them are crowded with cars, *which are used as storage-room for indefinite periods, because of inadequate warehouse provisions*.

Those are the remarks from the secretary of the board of trade at that point. The capacity to handle grain at the destination would double the capacity. Should not your attention be directed to the facilities at the sea-board to receive what is sent to them, instead of opening up rival lines to be used for loaded cars to stand upon side-tracks for storage purposes? Have the people at Peoria suffered by the "railway monopoly?" Let the following lines cut from their board of trade report for 1872 answer:

* * * The demand, however, for money at the banks for legitimate business in the movement of the different products of the West, and for mercantile purposes, has been satisfied. * * * The general business of the city has been most satisfactory. All leading articles show a large increase in the quantities handled—wheat and flour excepted. * * * The amount of general work done at the manufactories in iron, and the number of orders executed in the machine-shops, have been larger than during any previous year. * * * In all branches of general merchandise a large and satisfactory business has been done. * * * Labor, skilled and unskilled, has had its share in the general prosperity. * * * A habit of thrift prevails among the working classes of Peoria, which insures a partial independence upon which opposing interests find it difficult to encroach. The success of one savings bank as a depository for the savings of this class in the community has induced, during the year, the establishment of a second, and the number of depositors of small sums of money is daily on the increase. The amount of the savings in the two banks is double the amount at the close of last year, and now aggregates \$400,000.

Does this sound much like the wailings of an *oppressed people*, ground down by "railroad monopoly?" Would they exchange their prosperity for some locality where there are no railroads, or are they anxious to change places with the stockholders of the railroads that have made them what they are? If not, why this hue and cry about oppression?

It will always be out of the power of all the inhabitants of the West to have railroads run to each man's barn; therefore some must adapt themselves to circumstances. Corn cannot command a high price when far removed from railroad facilities. In such localities it will become more profitable to condense it by feeding to cattle and hogs, which can be driven to the nearest railway for transportation, and by establishing manufacturing to consume the surplus productions. It does not follow that because the freight and charges on a bushel of corn from some out-of-the-way place to New York, that it must be *burned*, instead of being fed out to hogs and cattle, or made into high-wines, that can be sent to a profitable market. There may be such an extreme case of suffering for fuel that the owner of a fine piano would be justified in using it for stove-wood; but it does not follow that it would be more profitable to make a business of burning pianos than coal, any more than burning corn under like necessity for doing so.

The question was asked by Senator Sherman yesterday, why the people did not invest their money in elevators in New York. I will answer that question, although I may trespass beyond my time, if you will allow me. While the very strange fact appears, that the capitalists of New York are investing their money in the same kind of storage capacity at the West, the difference and the reason of that is simply because of the difference in the system of storage of grain. At the West it is done

by inspection, and the grain of one grade passes into a bin with a capacity, perhaps, of 40,000 or 50,000 bushels. Therefore, with 20 bins of 50,000 bushels, you have a storage capacity of 1,000,000 bushels. That million of bushels done at a cent would be profitable. If you have the same amount distributed 1,000 bushels in a bin, and kept distinct by itself in the city of New York, you would have to have a thousand different bins, covering perhaps five or six acres of storage. It is utterly impossible to do the business spread over such an enormous amount of storage capacity, and make it profitable.

Mr. CONKLING. Won't you explain why five or six acres will have to be covered with bins?

Mr. HAYES. Simply because you will have to have a thousand bins. Your bins going up to contain 10,000 bushels need not be any larger than a small bin to contain a thousand bushels. Therefore, you have to spread the small-capacity bin out over a large proportion of territory.

Mr. CONKLING. If you eliminated the particular business usage here and trade in grain by inspection, what you are now saying is obviated?

Mr. HAYES. Yes, sir; it is that very point I wish to get at, and at that very point I wish you to particularly understand, as regards the freight of New York against the freight of other sea-port towns, and what the business men of New York will be compelled to meet, or lose their traffic.

Mr. SHERMAN. That is the very point I wish to get at. Why do they not change that?

Mr. HAYES. Simply because the custom for years has been to do it in its present shape. To do the business in that form, large warehouses had been built, at an enormous expense, and they are owned and controlled by the very men who own and control the operations of the Corn Exchange, and a different system of doing the business here would bring about a necessary loss to that particular kind of property. Therefore, there is a difficulty to be arrived at.

Mr. CONKLING. Is there no other advantage supposed to exist in preserving the identical grain?

Mr. HAYES. Not of sufficient consequence to overbalance.

Mr. CONKLING. What are the advantages, great or small, that are supposed to recommend the system that prevails here?

Mr. HAYES. None whatever, any more than would be in Boston, Chicago, or Baltimore.

Mr. CONKLING. What would they be, if you please, if they had any existence at all in any place?

Mr. HAYES. Simply suppose you buy a very choice article of grain out West and send it here, you might suppose that an inspector of grain would favor one party as against another, and inspect the grain a lower grade than the standard would warrant, and the man receiving would receive an inferior quality than the grain that started.

Mr. CONKLING. Does that in truth occur appreciably where inspection of grain is the custom?

Mr. HAYES. Not much; it does to a very limited extent. Where the board of trade appoint their inspector of grain he is liable to the board of trade, and what is called the arbitration committee furnishes him with samples of grain, to inspect by, in glass bottles. If he inspects the wheat No. 1, it goes into No. 1 bin. But because he has inspected it No. 1 does not compel you to receive that wheat as No. 1. When it is drawn out and delivered to you you say you won't take it. Your remedy is simply to put the sample beside the sample of No. 1, refer it to the arbitration committee, and, if it is not up to sample, the

warehouse company have to give you what your receipts call for. If that system was established here it would take some little time to bring it about; but it could be brought about, and it is for the interest of the merchants of New York to bring it about, or their trade is gone.

Mr. CONKLING. Is the evil or hazard you have just stated the only consideration that you know weighing in favor of preserving the identity of grain?

Mr. HAYES. That is all.

Mr. CONKLING. Now will you be good enough to state for me again, as I did not quite understand you, in regard to the warehouse property here and the objection of owners, the warehouse-men, to the inspection system?

Mr. HAYES. The system, as I stated before, of receiving and delivering the identical grain which originally came down by the canal, as the only means of transportation, came generally by boat-load. There was not so much difficulty in keeping boat-loads separate as there is in keeping car-loads separate, because a boat-load will amount to six or seven thousand bushels, and to an elevator would be of fair quantity to go into one bin, being of equal grade; but when you come to private bins for car-load quantities the difficulty is increased very rapidly. For a seven-thousand-bushel boat-load you require a seven-thousand-bushel bin, but for the same quantity by car-load you require one hundred and forty different bins, supposing it was consigned to one hundred and forty consignees and it was the same grade of grain. No man can afford to provide one hundred and forty bins for the same quantity of grain that he can receive in a canal-boat. Therefore, the inspection of grain here, by grade, received by cars, is a matter of necessity that must be brought about.

Mr. CONKLING. And so I understand that the facilities which grew up to receive grain which came down the river in tows by barges, are the only facilities existing now for the reception of grain that comes by rail?

Mr. HAYES. That is all, sir; I am coming right to that point.

Mr. SHERMAN. In conversing with an intelligent business man here engaged in business, he told me that the real difficulty of changing the system was because the railroads refused to guarantee the quantity of freight. They were willing to carry the wheat, but they refused to guarantee the exact quantity. There was more or less wastage, and it was only at exceptional times that they would guarantee the identical quantity.

Mr. HAYES. The operation of these lines going directly to the place of production reached many times a section of country where the road is too poor to own their own warehouses, and, for the purpose of developing the resources of that country, an individual will go in and build a warehouse. That owner of the warehouse is the owner of the grain. He loads it himself; we have nothing to do with it, only to see that he does not overload the cars. It is natural to suppose he will put in about as little as will turn the scales. When it reaches its destination, instead of passing into the company's elevator, or to an elevator situated where the company can see it weighed, it passes out of our hands entirely into the hands of other parties, so that we have nothing in this world to do with weighing the property in or weighing it out. Therefore it is unreasonable to suppose that we have got to make good the shortcomings of the two weighers which we have nothing to do with whatever. But if it is satisfactorily established that a man has put in honestly three hundred and fifty or three hundred and sixty bushels

of wheat in a car, and that car passes through without transfer, and the inspection of the car here shows that it arrived in good order here, and that the seals are unbroken, and we deliver to that man all that the car contains, we take the ground that we have delivered all that he put in, and are not responsible for what he says that he put in, or what the other man says he took out, because we do not weigh it at either end.

Mr. SHERMAN. In Chicago the men who own the elevators are really and practically the agents of the railroad companies. There it is weighed by the railroad company.

Mr. HAYES. I was just coming to that point. At Chicago, for instance, or where there is an elevator that is controlled, or where a railway official can be sent to weigh the grain into the car, and it comes down, and the proper facilities for inspection, and grading, and delivering from a railway elevator, no matter whether it is owned by the railway company or by individuals, we are bound, in my opinion, to deliver every single pound of property that we receive, and I think the law would compel us to do that just the same as it would compel a canal-boat to deliver the quantity, but it is unreasonable to expect that we shall deliver what is said to be in a car when we have no agency whatever in putting it in or taking it out.

Right here I will mention the system of receiving the grain at New York. In the lines of railways coming into Jersey City that is the end of their road. They go no farther. The lines of railroads coming into New York get to New York. Now who shall say where New York is; whether it is up to Thirty-third street as far as the freight-cars can get down; down at Saint John's Park, where the dry goods are delivered; or way round the battery to the piers, where the flour is delivered; or over in Brooklyn, where the grain is delivered? There is great difference of opinion where New York is. Now, the railroad companies, for the purpose of competing with other cities who have furnished these elevating facilities for the discharge of grain, have taken upon themselves to bring this property to the end of their road, but it does not stop there. If it is in five car-load lots to one consignee, and one grade, they discharge it into a barge, and that barge is delivered alongside of a ship anywhere in the harbor, to any elevator, or any public storehouse, free to the shipper. That is one of the Credit Mobilier rings that is spoken of as existing inside of these other rings. Seven years ago I was connected with just that ring myself. I came here to make a contract for the delivery of that property from the end of the rail to any point in New York where the man wanted it. I did the very best that I could, and it cost a dollar a ton to deliver that property, but it did not cost the consignee one cent, nor the receiver one cent, nor the shipper one cent. The roads paid it.

Mr. CONKLING. To deliver it how?

Mr. HAYES. From the end of the road to the ship or the elevator. I was at liberty to make the contract with any man that I could do the best with. I made the contract. The supposition was that if there was anybody to get any money out of that I was to get a share of it. I state to you distinctly that from that time to this I have never received, and never known of any railroad official having received, one single farthing.

Mr. CONKLING. When you say you never received, you say you include, also, the parties behind you?

Mr. HAYES. I do not speak of that from my knowledge.

Mr. CONKLING. I do not understand you now. You came here not to contract for yourself individually alone, but for that line?

Mr. HAYES. Yes, sir.

Mr. CONKLING. And the line you say never received any money?

Mr. HAYES. I say that the line which has the ring within a ring, supposed to be—that I made the contract to do this business, and that I would naturally share in its benefits. I say, so far as I am personally concerned, or any railway officer I ever knew being connected with the roads at any point, never received, to my knowledge, one single farthing of the money, and for that part of it we have received no thanks from the merchants of New York, simply because we were not entitled to any, because it was a matter governed by the law of supply and demand. We had to do it in order to compete with the lines that furnish these facilities at other points. The time has now got to be such that this property handled by rail cannot be done in that way in the large quantities you speak of, therefore a different system in the handling of grain received here by rail will have to be inaugurated and the grain inspected and go into storage, according to the grade, so when a train of cars comes in it can be unloaded at once by the inspector's designation of the quality of grain, and the cars moved out. The consignee will be notified that he has so much No. 1 or 2 grain in store. He pays no attention to it whatever. If it lies there thirty days it is all very well; he need never see the grain at all. He can go to the bank and borrow money upon his storage receipt; that storage receipt forms a capital of trade, and continues on from bank to bank, and perhaps from month to month. When he sells it he sells it subject to charge or charges paid, and the same party goes and presents his receipt, and draws from the bin the quantity he is entitled to. It is that cheap storage and the facilities for handling it here, so that the purchaser of the West can afford to keep it here instead of keeping it out west, that must afford the relief that the merchants of New York ask for, or their business must be turned over to parties who do furnish these things.

Mr. CONKLING. What is your remedy for the difficulty stated by Mr. Sherman in consequence of which you are unwilling to guarantee a sufficient number of bushels or pounds on delivery, owing to the fact that it is weighed by strangers to you at the termini?

Mr. HAYES. At the receiving points many of the railway companies receive it, weigh it, and load it, and give a receipt for a specified quantity to be delivered here to an elevator or storage, where the railway company also weigh it.

Mr. SHERMAN. The trouble is in that way the owner of the wheat is compelled to take the actual quantity that comes through without regard to the amount that he actually delivered; that is the point.

Mr. CONKLING. Not as he states it now. If they weigh it themselves and give him a bill at Peoria, which bill acknowledges the receipt by them of 360 bushels of wheat, that entitles him to 360 bushels of wheat here.

Mr. HAYES. The merchant who tells you about guaranteeing, if he will take the trouble to look further on his bill of lading, he will see that it is receipted for in that way, "weight not guaranteed," simply because we do not weigh it.

Mr. CONKLING. But I understand you to say if you had to weigh it, then you are willing to guarantee the weight which you yourself ascertained?

Mr. HAYES. That we have done, going from the company's elevator in Chicago to the Boston and Albany elevator in Boston, less one per

cent. shrinkage. Now it is a matter of no difference at all whether we assume that one per cent. or the shipper, as the rate might govern the risk. My own opinion is that we should assume it in a general arrangement for transportation.

Mr. CONKLING. Waiving whatever there may be of shrinkage, I understand you if you superintend the loading and unloading of wheat you are willing to guarantee the quantity in transitu as the receipt calls for?

Mr. HAYES. The arrangement should be that we should deliver where we weigh in and weigh out. There was one of the difficulties that created the necessity for these lines. For instance, the Michigan Central Road would weigh in a certain quantity of grain and give its receipt for it. It would come down to Boston and be weighed out by an entirely different company. A man in Boston says, I am not going to guarantee the weight of the Michigan Central Railroad elevator. The necessity of the consignees to receive the overcharge, if any, or damage, if any, at Boston, compelled the formation of lines by which this receipt should not be a Michigan Central Railroad receipt, but should be a line receipt that would bind the settlement of these overcharges, losses, and damages, and shortages at Boston precisely the same as it would if it was the Michigan Central Road ending in Boston. And the establishment of the general management of all these lines is simply that when a thing of that kind does occur, and the Boston and Albany Road or the New York Central or Hudson River Road here are compelled to honor that line's receipt as a part and parcel of the whole, he does it for that line, but he does not go to work and piece-meal this out and collect 50 or 75 cents at different points; he simply charges the whole of it to me.

Mr. CONKLING. You spoke of wheat being taken on in many places where, as you said, the railways were too poor to supply elevators. How in case of wheat taken on at stations where there are not railway facilities? Do you propose to superintend the weighing or measurement of wheat so that you would be willing to guarantee the quantity?

Mr. HAYES. There are many points where it would be impracticable to do that. From those points the roads would have a local rate to an elevator at the termini of the road, and would there be weighed and then delivered to us by the elevator-weights at the terminus.

Mr. CONKLING. And from the first elevator you strike, this arrangement would hold?

Mr. HAYES. Yes, sir.

The CHAIRMAN. I think I do not understand either you or Mr. Potts on one point. You spoke of the effect of these lines west of Chicago being to carry freights the same at the same rates per mile from competing points that they are carried from Chicago east, or am I mistaken?

Mr. HAYES. That was the effect.

The CHAIRMAN. Now, what I want to know is this: suppose that from Winona, Minn., the charge averages three mills per ton per mile, and assuming that to be one of your points—not carried upon your line, and your pro rata rates are one and one half mills through, would it, put on your cars, go cheaper than put on ordinary cars.

Mr. HAYES. Not at all.

The CHAIRMAN. How do I understand then the effect to be produced suggested a moment ago?

Mr. HAYES. The effect of that would be that we furnish that man with the through car. Suppose he hauls it fifty miles and loads it, he has the expense of loading that car for the main line, which, perhaps, may

occupy him a whole day, and the expense of receiving, and all that sort of thing, but when he gets to the main line, where it takes a competing rate, neither the road where the load originated is put to the expense of unloading that, and the receiving company agree to load it up again. Both companies are relieved from that expense, by which they can afford to reduce to a corresponding extent the through rate from that point on, while the local rate from that fifty miles up to the main line is not remunerative at anything like the difference you speak of because of the short haul and the cost of handling.

The CHAIRMAN. Now, I understand you that Saint Paul is a competing point?

Mr. HAYES. Yes, sir.

The CHAIRMAN. Winona is not?

Mr. HAYES. Saint Paul is a competing point to a limited extent. Not so much as Chicago or Saint Louis.

The CHAIRMAN. I am speaking now of the points west of Chicago. Is it any cheaper for the farmer or the shipper at those points to ship by your cars or the other?

Mr. HAYES. Not at all the same price.

The CHAIRMAN. So that they really pay over those Western roads to Chicago on your cars the rates of the Western roads?

Mr. HAYES. Yes, sir; if you are familiar with the charges from Saint Paul down to Chicago you will understand they are higher in proportion per ton per mile than they are from Chicago here. That is in consequence of competition at Saint Paul being much less than at Chicago.

The CHAIRMAN. I understand that, but that is not the point I want to get at. The information I want is the effect of your line upon shipping transportation over your line. It does not cheapen it, I understand you?

Mr. HAYES. We have not yet opened into Saint Paul, but are now going into it. The effect of that will be to stimulate another line going up over the Milwaukee and Saint Paul line to bring this property to another route, and I apprehend that in less than twelve months time the rate per ton per mile would be no more out of Saint Paul into Chicago than it is from Chicago here. Therefore the benefit to be derived from this line being extended to Saint Paul will be to reduce that proportion of transportation simply, because the facilities furnished will enable them to haul twice as much. Therefore they can afford to haul it for less. That is the effect.

The CHAIRMAN. Name one of your competing points west of Chicago.

Mr. HAYES. Burlington.

The CHAIRMAN. Do you carry at any less rate per ton per mile from Burlington than you do from Dubuque?

Mr. HAYES. Yes, sir.

The CHAIRMAN. It is prorated from Burlington to New York, and pays no more over the line west of Chicago than it does east of Chicago.

Mr. HAYES. Yes, sir. This same town of Peoria will illustrate that as well as anything else. When you come down to Peoria, the rate from there, owing to a shorter line to the sea-board by the way of Baltimore and the other outlets south, is only 5 cents more per hundred than from Chicago, winter and summer. During the summer sometimes the rates have been the same as from Chicago. Therefore, when we take the property from Peoria and bring it up to Madison they cannot afford to bring it for that short distance at the same rate; therefore,

we allow them, say, 10 cents a hundred, to bring it up there. When the rate is 5 cents more we are compelled to take that property that originated in Peoria from the points at Chicago down here at 5 cents per hundred less than the Chicago rate, and the whole line receives just that prorated proportion less, because it originated at a point where competition to a shorter line compels us to do it or lose the business, and the business comes to Baltimore instead of coming to New York.

Watered stock of railroads comes in for its share of investigation. The original cost of the road, or its present actual value, seems to be the question at issue, upon which the capital stock should be issued. There should be no question about it at all; any property should be rated at its value. If new roads are to be built to compete with those now in operation, they must be based upon present value or cost of building them. If they cost twice as much now as they would have done thirty years ago, you certainly would not expect them to get twice as much money for doing the business, or for capital to get only half as much return, owing to the additional cost. If not, then is not both of equal value, whether built years ago or now? Therefore, when the various roads which form the present New York Central and Hudson River Railroad were consolidated into one, each section would value its part, so as to agree upon its proper share in the new issue of stock. The property in New York may have advanced 500 per cent., while that at Auburn or some other points have remained about the same. Therefore, there could be no other way upon which to arrive at an equalization of stock ownership in the new organization only by valuation of each section. To illustrate this, I will take for example the early settlement of Rochester, N. Y. Then two men lived there, one owning too much land and the other too many cattle, so they traded, a piece of land for one yoke of cattle. That land now, without any improvement, would be worth about *two millions of dollars*. If wanted to establish a manufactory upon, and the owner was willing to take stock in the company for the land, would there be any question about his getting stock for the cash value of the cattle, the original cost, or at the present value of the land? If not, then why should not the different short lines of railroads get the value of their property when getting paid for their share of the new organization. It may be said that the State granted the companies peculiar franchises in their charter, for which the people have a right to expect some privileges in return.

Let us see what some of those "peculiar franchises" were.

First. Was the right to pay for all the property required at its full value.

Next. The state owning the Erie Canal would not permit the railroad to carry freight over the canal, but might bring it to the canal. Finally, small valuable parcels might be taken, to meet an urgent demand, in charge of a messenger or passenger trains. This created the express companies. The pressing demands of the public finally allowed freight to be carried without discrimination.

Next. The State fixed the rate of passenger fare at two cents per mile, while other roads in other States got from three to four cents per mile. By this "peculiar franchise," the people reserved to themselves about one-third of the ordinary fair paid in other States for the same service. The control of legislatures, by railroad monopolies, is also urged. But little is said of the very absurd bills that are brought into legislatures by members—bills that are wholly impracticable, and were they allowed to pass, would ruin the business people of New York, as well as the railroads. Some of them may be honestly believed in by

the proposers of them, while some are introduced apparently for no other purpose than to find out how much money can be got out of railroads to defeat the bills; simply what might be termed "black mail" bills. The facts are notorious, that railroads cannot get even-handed justice from an ordinary jury in our courts. The decisions are almost invariably against the railroad company, without much regard to law or evidence.

Land grants are another source of complaints. Speculators have made money out of them, the government swindled, and such like surface arguments to prejudice the public mind. True, some unworthy examples may be cited. But if all are to be condemned for the faults of a few, and this theory carried out into other branches of business, we might refuse to have money because some persons have counterfeited the genuine, or some thieves are in prison for stealing money. Are not swindles practiced in other business as well as land grants to railroads? If roads are needed to open up new countries where traffic is to be made by reason of opening out Government lands, should not the Government aid in adding value to its own domain? If aid was given in the shape of money instead of public lands, would not the swindler get hold of the money in time to spend it, before the road reached into that country, that must remain in undisturbed solitude unless the road is built.

What did the Government lose by the grant to the Illinois Central? The alternate section left to the Government was worth four times as much after the road was built as it was before. Therefore, if the country could not be developed without the road and the road could not be built without the land-grant, and the Government could sell their remaining half at twice as much as the whole was worth, besides opening up millions of acres outside of these grants, what cause is there of complaint? Even if the company did make something out of its part of the land, should the Government refuse to aid in building roads through its unbroken territories, where it would be financial madness to locate and build roads with private means, where there would be no traffic for years to come? Government cannot expect private capital to open up the country for its benefit; therefore the best way to aid them is by granting public lands and getting back in a few years more money in the Treasury for what is left than the whole was worth.

ELMORE H. WALKER. Mr. Chairman, the two more prominent competing routes for the interior trade and commerce between the great north-west and the sea-board will be by the lakes and the Erie Canal, through the State of New York, and by the lakes and the Saint Lawrence River, when the Welland and Saint Lawrence Canals shall have been enlarged. The latter route can now pass vessels through the Welland Canal of four hundred to four hundred and fifty tons measurement, carrying six hundred to seven hundred tons cargo. The proposed enlargement of both the Welland and Saint Lawrence Canals for the passage of vessels of twelve hundred tons measurement, carrying about sixteen hundred tons cargo each, is expected to be completed within three years. And when that work shall have been finished and opened for business, the State of New York must be prepared to meet a competition by the Saint Lawrence route, at a rate of transportation from Chicago to Montreal not exceeding an average of \$3.50 per ton of 2,000 pounds, which is equal to a small fraction over ten cents per bushel of sixty pounds.

By the CHAIRMAN:

Question. Why do you make that statement?

Answer. Because the rate of freight from Chicago to Kingston has in

the past, with the present imperfect facilities, been frequently 10 cents per bushel and less. When the Welland and Saint Lawrence Canals shall have been enlarged to a capacity for ships of twelve hundred tons measurement, carrying about sixteen hundred tons, the cost of transportation, as compared with that in the past, will be largely diminished, giving the ability to transport grain from Chicago to Montreal at a profit for 10 cents per bushel of 60 pounds, or less than 10 cents.

Q. What do you regard the relative advantages of Montreal and New York for foreign shipments?

A. Equally good for seven months of the year, or during the season of open lake and river navigation.

By Mr. CONKLING:

Q. Including insurance?

A. Yes, sir. The rates of insurance from Montreal to foreign ports have been in the past the same as from New York, except in April and November, when the rates from Montreal are a very little higher than from New York.

By the CHAIRMAN:

Q. And your estimate is that, with the improved Welland and Saint Lawrence Canals, grain could be transported from Chicago to Montreal for 10 cents per bushel?

A. It could be done at an average rate of 10 cents per bushel with a profit to the carrier. The average rate of transportation from Chicago to New York via the lakes and the Erie Canal for the last seven years, including State tolls, and exclusive of Buffalo shipping and transfer charges, has been \$7.23 for wheat and \$6.92 for corn per ton of 2,000 pounds, or an average of about \$6 per ton, at which rates carriers have made little or no profit on the canal portion of the route. With all large vessels on the lakes, and an enlarged Erie Canal for boats of six hundred tons burden, the cost of transportation from Chicago to New York would not exceed \$3 per ton of 2,000 pounds.

Q. What is your information as to the relative value in New York of wheat shipped from Chicago by water and by rail?

A. If the grain is in good merchantable order when shipped, there is very little if any difference in the value of the same grades of wheat. Shippers prefer to take boat-loads of grain for export that have arrived in good order by canal, as it is a good indication that it will remain in good order during the ocean voyage. It is also more convenient for exporters to have the grain in the larger bulk of canal-boat loads than in the smaller bulk of car-loads. During specific portions of the year, when grain in large bulk usually goes through what is called the 'sweating process, that moved by rail is generally preferred, on account of its generally better merchantable condition. New corn is less liable to heat when moved by rail than by water, on account of the smaller quantity in a body together, and the greater celerity of movement. If grain is well cured in the grower's granaries before shipment, the value, whether transported by rail or water, is about the same at sea-board ports. Corn however, is garnered in open cribs, exposed to all kinds of weather, and when shelled after being out all winter, contains a large percentage of moisture, and if put in large bodies in elevator bins, or in large vessels or canal-boats, is generally liable to heat, which diminishes the weight and deteriorates the general condition, causing loss to the middle-men handling it, and selling for less money at sea-board ports when shipped.

in this condition by water than if shipped by rail in smaller aggregated quantities, diminishing the chances of damage. The grower, when shelling corn in this moist condition, gets pay for three or four pounds of moisture, which is so much premium for always selling it in a moist condition, but the consequence is generally a serious loss to the middle-men between the grower and consumer. Corn is, when in this moist condition, largely shipped from the interior to the sea-board by rail, and sells for more money, it being generally in better merchantable condition on delivery at the sea-board than when shipped by the water-route in moist condition. But, if sold for export, the exporter takes the risk of its heating on the passage to Europe, and not the middle-men between the grower in the West and the exporter at the sea-board. But as soon as the corn has been thoroughly cured and freed from the danger of heating in passage by water, both the middle-men and the exporters prefer that received by the water-route at the same price. It sometimes commands more money when in merchantable condition than if received by rail.

Q. What is the relative value of corn dried by the drying process in Buffalo and that not dried when it reaches this market?

A. It depends upon what the condition of the corn was when the drying process was commenced. If it had not been previously damaged it would probably command as much and sometimes more than that undried. It, however, does not generally command enough greater price when dried, even if in good order before drying, to make good the diminished freight and the expense of drying; hence very little corn undergoes the drying process unless that already damaged by being heated, or that which has so much moisture as to be in danger of heating badly on the passage from Buffalo to New York. The renovating process is sometimes limited to blowing and screening, which temporarily checks the heating.

By Mr. CONKLING:

Q. By weight or measure?

A. By weight.

Q. Would it also by measure?

A. I cannot say as to that, because the sales here are always made by weight, at 56 pounds to the bushel.

By the CHAIRMAN:

Q. Is there not a diminution in both weight and measurement?

A. There would be a diminution in both weight and measurement by the drying process, and on the former from one to four or five pounds per bushel, usually one or two pounds.

By Mr. CONKLING:

Q. With greater diminution of weight than measurement?

A. I think so.

By Mr. SHERMAN:

Q. You say the price is no less?

A. If the corn had not been previously damaged by heating or by water, it would rather improve the condition.

By the CHAIRMAN:

Q. Is corn damaged by being artificially dried?

A. It would not be damaged by a properly constructed and carefully regulated dryer. Some of the dryers burn the corn and give it an unpleasant odor which cannot be eradicated; but some of them do not.

By Mr. NORWOOD :

Q. You speak of the value of corn for food, I suppose, and not seed ?

A. Yes, sir.

By the CHAIRMAN :

Q. What is the object of drying corn in good condition at Buffalo ?

A. That is sometimes done to prevent its being damaged. It is also dried when in good condition for manufacturing into meal. This drying process prevents the souring of the meal after grinding, so that it may be shipped to any part of the world without damaging on the voyage.

Q. Do you know about the cost of that drying process ?

A. I do not know what the present charge is. I have paid as high as ten cents per bushel for kiln-drying corn, but I think with the competition among dryers the charge is now about two cents per bushel, varying with the amount of moisture taken out ; but there is the loss to the owner of the corn of the shrinkage over and above the charge for drying.

Q. Will you speak of the terminal facilities, here or will some other member of the produce exchange give us some information on that point ?

A. Perhaps some other gentleman will be more familiar with that, sir, than I am.

By Mr. CONKLING :

Q. Does drying corn destroy the germinating faculty ?

A. If the heat is too great it does.

Q. Does it not aim to go far enough to do that ?

A. It usually will in some of the dryers if not most of them, but in some the moisture is drawn out instead of being driven in. In these dryers the temperature is not high enough to destroy the germinating faculty of the corn. I would like to state in general terms that, in my view, the question of internal transportation is the most important one to be solved now and in the remaining portion of this century. The movement of through freight East and West by all routes north of the Ohio River is about thirteen million tons per annum, in the ratio of about three tons moved eastward to one ton westward ; and of local freight by all these through routes about twenty million tons per annum ; therefore, the local and through freight aggregates by the through routes alone about thirty-three million tons per annum, including both rail and water routes.

The rail rates on fourth-class freight from Chicago and other terminal points in the West on about the same meridian to the sea-board are eight to ten dollars per ton, during the season of open lake and canal navigation, and from twelve to thirteen dollars per ton during that portion of the year when the water-lines are closed by frost. The summer rate by rail is about nine mills per ton per mile, and the winter rail-rate is in the ratio of 1.214 of a cent per ton per mile. The summer rail-rate from Chicago to Philadelphia, New York, and Boston has been respectively \$8, \$9 and \$10 per ton, and the winter-rate \$11, \$12 and \$13 per ton, respectively.

The water rate for the last seven years, from Chicago to New York, via the lakes, the Erie Canal, and the Hudson River, has averaged \$7.23 per ton on wheat, and \$6.94 per ton on corn, including the State canal tolls, and excluding the shipping and transfer charges at Buffalo. The difference in the average price of wheat and corn is caused by the higher

State tolls on wheat than on corn. The average freight on grain has been for the last seven years about \$7 per ton from Chicago to New York, by the water-line, exclusive of Buffalo shipping and transfer charges, and including the State tolls and the carrier's profits.

The rail rate cannot on the average be less than \$9 per ton from Chicago to New York, if all the freight is transported at that rate. If the Central Railway of New York should carry all its freight at the rate of three-quarters of a cent per ton per mile, on its mileage of 1872, it would not have earnings sufficient to pay its running expenses, and could not pay either interest or dividends. If it should carry all its freight at the rate of twelve cents per bushel of sixty pounds of wheat, which is at the rate of nine mills and a small fraction of a mill per ton per mile, it could pay running expenses, interest, rent of leased roads, and would have only about \$200,000 over and above that with which to pay dividends, aggregating about \$8,000,000 annually; so that, practically, unless some means not now in use can be devised to diminish the cost of rail transportation, the people cannot obtain the relief they seek from onerous charges for the transportation of their products through the medium of railways.

With all large class vessels navigating the lakes, say of two thousand tons capacity each, property can be transported from Chicago to Buffalo for \$1.50 per ton, including the carrier's profits; and with an enlarged Erie Canal, for boats of six hundred tons carrying capacity, the rate from Buffalo to New York, including nominal State tolls and the carrier's profits, could be reduced to an average of \$1.50 per ton, or \$3 per ton from Chicago to New York. With steam on the lakes and the Erie Canal and the Hudson River, the time of transit from Chicago to New York need not be more than ten to eleven days.

These improvements and changes once made, the cost by the water-line will be six to seven dollars less than that now charged as the summer rail-rate, and this difference in cost on a through movement of thirteen million tons per annum would be from sixty-five to ninety-one million dollars per annum. But the movement will be largely by rail in any event. The rail routes will continue to divide the present movement with the water-lines, as well as its annual increase.

The live-stock trade, including the products of animals, comprises about one-ninth of the through-tonnage of the five great through-lines of railways, and is about one-sixth of the eastward through-movement. Besides, there are large classes of other commodities that will go by rail in any event, including all the lighter commodities that will bear the higher rail charges. The greater celerity of movement by rail, the saving of interest and insurance, will always insure a large patronage of the railways. But in a very large proportion of the heavier classes of freight there would be a saving by the using of the water-lines, as they may be improved, of five to six dollars per ton. The through-tonnage, which is now about thirteen million tons, will, before the end of the present century, probably be swelled to fifty million tons.

The population of this country from 1790 to 1860 has been increased approximately in the ratio of three per cent. per annum compounded. During the period of the war from 1860 to 1870 there was a falling off in immigration and a large loss in population from the civil strife between the North and the South. The previous ratio of increase was not maintained during that period. Taking the population by the census of 1870 and computing the increase in the same ratio as that from 1790 to 1860, the population at the end of the century will be about ninety-eight millions, and in 1903 will be one hundred millions. The westward movement of

the center of population, if continued to the end of the century in the same ratio of the last two decades, will remove the center of population to the Mississippi Valley, and in this and the lake valleys, probably, one-half of the whole population of the country will be gathered.

The productions of agriculture and manufactures will be, probably, augmented in a proportion exceeding that of the population; so that the one great question to be considered during the coming thirty years is the transportation of the productions of fifty millions of people and the consumption of fifty millions more.

New England and the Middle States take more of western-grown grain than all the foreign exports of grain. The live stock for their food-supply must come nearly all of it from the West and Southwest, where there is cheap corn and cheap forage. The consumption of live stock now, in the four principal cities of the sea-board, including Baltimore, Boston, Philadelphia, and New York, exceeds six and one-half million head per annum.

The people are now paying annually for the transportation of persons and property by rail and by water about \$1,000,000,000. With the increase in population and the extension of railways and the wants of consumers and producers, that will probably be swelled before the end of the century to two thousand five hundred millions per annum; so that as a question of money and its annual disbursement it assumes a greater magnitude than that of any other that can or will come before the people of this country. The remedy for the present onerous rail and water charges will be in the improved and cheaper water routes and in the extension of the railway system.

The New York Central Railway Company is now doubling its track, and so is the Pennsylvania Central Railway. The Erie and Baltimore and Ohio Railways will be compelled to do likewise, or take a secondary position as railway routes. The Chesapeake and Ohio and the Grand Trunk Railways will, in time, follow suit. A new railway from New York to Omaha has been projected, and the necessary legislation in six States through which its line passes has been obtained to secure the right of way. The road is designed to be a double-track railway, exclusively for freight. There will, in a comparatively short period of time, probably be six or seven double-track freight railways between the Mississippi Valley and the eastern sea-board. These improvements will, by their competition, give some relief, but perhaps not much in the item of cost; but all these improvements, as well as the contemplated system of improvements of the water-lines, will be required to meet the business wants of the country. These facilities for transportation can scarcely be multiplied rapidly enough to meet the requirements of the people, for now, in the far West, it takes the product of about three acres of corn to pay for the transportation of the product of one acre of corn to eastern sea-board markets, and that, of course, must be a heavy draft upon the producer as well as the consumer. The State of New York alone takes for her annual consumption about forty-five million bushels more of cereals than are grown within her borders, and the New England States take an equal or larger amount than New York.

By the CHAIRMAN :

Q. You mean of all kinds of grain ?

A. Yes, sir. That is including flour, wheat, corn, and other cereals. The New England and Middle States together take more western grain than the aggregate exports from the whole country to all foreign countries.

In the trade between the interior and sea-board terminal points, the route through the State of New York, in connection with the western lakes, early took the precedence, and for a long period secured the most of it through the Erie Canal, and later with the railway progress through the aid of the Erie enlarged canal and the railways through the State, has been able to retain about 60 per cent. of the through movement east and west between the sea-board and the Western and Northwestern States, but in several years it has had less than 60 per cent., other sea-board terminal points, through the aid of railways and the development of the Saint Lawrence route, having secured 40 per cent. of the movement, and in some years more than 40 per cent. The gain in the volume of movement between the interior and the sea-board has been large and is annually increasing, but the percentage of gain has been larger at other sea-board terminal points than at New York during the last ten years.

The value of the property transported on the New York canals between the West and the East since 1837 has aggregated upward of \$7,000,000,000. The revenue from the tolls on this property has been large, sufficient to pay for the construction of the canals and their maintenance, including the cost of the enlargement of the Erie and Oswego canals. The canals of New York have paid for themselves by their earnings, without costing the people of the State a mill.

Under the New York State constitution of 1846, a provision was made requiring the revenues from the canals to contribute \$350,000 per annum to the sinking fund of the general fund State debt and \$200,000 annually in addition for the defraying of the expenses of the State government, making an annual contribution from the canal revenues of \$550,000. The constitution also provided that when the revenues of the canals, over and above their maintenance, were insufficient to make this annual contribution of \$550,000, a tax should be imposed on the property of the State to make good such deficiency. It will be found that the aggregate of these contributions from the canal revenues, with annual interest on the same, aggregate a larger sum than the taxation for canal purposes, with the annual interest on the same; so that the people of the State of New York have had all the benefits of a canal commerce, aggregating since 1837, \$7,000,000,000, beside having a canal system nine hundred miles in length that has paid for itself and its maintenance from its earnings, without costing the people of the State a dollar. The tonnage of the property transported on the New York canals during the last twenty-three years is more than double the entire tonnage of all the vessels entered the port of New York from all foreign countries, including American and foreign vessels, and it is equal to two-thirds of the entire tonnage of all foreign and American vessels entered all the ports of the United States from all foreign countries during the same period.

The value of the property transported on the New York canals during the twelve years ended with 1872 aggregated \$2,940,888,522. The value of the entire foreign exports from the city of New York to all foreign countries during the same period was \$2,272,157,286, showing that the value of the property transported on the New York canals, during the last twelve years, has exceeded the value of the entire foreign exports from the port of New York during the same period by \$666,731,236.

The trade passing through this State by the railways is large and annually increasing, and the grand aggregate value of the entire trade between the interior and the Atlantic sea-board terminal points by rail and water-lines is estimated at \$1,300,000,000 per annum; so that the

question of a change in the course of this vast trade is one of not inconsiderable moment to the terminal points interested in securing it. The terminal point at the sea-board that can give the cheapest transportation to and from the interior will secure the largest volume of this vast and annually increasing trade. The State of New York, from her position and the facilities she has provided through her canal system and her railways, has secured a very large proportion of this trade heretofore, but she will continue to hold it no longer if she fails to give cheaper facilities than other sea-board terminal points. The proposed improvement of the Saint Lawrence route, by the enlargement of the Welland and Saint Lawrence canals, which are only sixty-nine and one-half miles long, will afford a cheaper transportation than the State of New York, with her present facilities, can give, for it will extend ocean navigation practically to Chicago, Milwaukee, and Duluth. The only remedy for the State of New York to adopt to hold the vast trade of the west, and its increase, is the enlargement of the Erie and Oswego canals for boats of about six hundred tons burden, and such enlargement, with the application of steam as a motor for moving boats, will so cheapen the transportation from the lakes to the Hudson River as to secure the desired result, the retention of the trade of the Northwestern States.

By Mr. SHERMAN:

Q. At this point I would like to have you give the cost of transportation over the Erie Canal, when completed according to the present plan which, I believe, is being acted upon.

A. The present plan contemplates the doubling of all the locks on the Erie Canal, only two of which are not now doubled; the removal of the bench walls on the eastern division of the Erie Canal, extending about eighty miles, where the bottom of the canal is now 42 feet wide, and making it 52 feet wide, and the deepening of the canal its entire length, giving full 7 feet of water where it is now less than 7 feet. The average freight during the season of navigation in 1872 received by the carrier, including State tolls and Hudson River freight, from Buffalo to New York, on grain was \$4.28 per ton of 2,000 pounds, and less the State tolls \$1.38 per ton, leaves a net freight to the carrier of \$2.90 per ton of 2,000 pounds, including the river freight, is at the rate of 5.8 mills per ton per mile, which covers the carrier's expenses and profits. The auditor of the canal department, in his report on the tolls, trade and tonnage of the canals for 1872, page 34, gives the average per ton per mile received by the carrier, at 10.2 mills, including State tolls. In the same report he gives the average amount per ton per mile received by the carrier from 1856 to 1872, as follows:

1856.....	11.10 mills	1865.....	10.10 mills
1857.....	7.99 mills	1866.....	10.00 mills
1858.....	7.97 mills	1867.....	9.00 mills
1859.....	6.72 mills	1868.....	8.80 mills
1860.....	9.94 mills	1869.....	9.20 mills
1861.....	10.08 mills	1870.....	8.30 mills
1862.....	9.59 mills	1871.....	10.02 mills
1863.....	8.76 mills	1872.....	10.02 mills
1864.....	10.15 mills		

The average amount received by the carrier, including the State tolls for the seventeen years ended with 1872, was 9.14 mills per ton per mile, including the carrier's profits, which is an average from Buffalo to Troy, three hundred and forty-five miles, of \$3.15 per ton, and from Buffalo to

New York, five hundred miles, of \$4.57 per ton of 2,000 pounds. State Engineer Taylor, in his special report of 1863, on canal enlargement, makes the cost per ton per mile on the present Erie Canal 2.16 mills, and 1.04 mills per ton per mile with a re-enlarged Erie Canal, of capacity for boats of 600 tons.

The transportation can be done cheaper than it is now, and must be done cheaper than it is done now, or can be done with the present facilities, to compete with the proposed improved facilities by the Saint Lawrence route. To hold the trade the rate of transportation from Buffalo to New York should not exceed \$1.50 per ton, on the average. With \$1.50 per ton, average lake freight, and \$1.50 per ton, average freight from Buffalo to New York, the foreign export and import trade of the interior can be prevented from going by the Saint Lawrence route.

Q. What extent of improvement is necessary; what size locks on the Erie and Oswego Canals?

A. The present locks in the Erie and Oswego Canals are $18\frac{1}{2}$ feet wide, and admit boats with the present lock-gates $96\frac{1}{2}$ feet long and $17\frac{1}{2}$ feet wide. The prism of the Erie and Oswego Canal, on the present plan, is 52 feet at the bottom, 70 feet at the water-line, and 7 of water. The proposed improvements to the Erie and Oswego Canals are to be found in State Engineer Taylor's special report of 1863 on canal enlargement, transmitted to the legislature of New York February 4, 1864. This report proposes the construction of one tier of locks in the Erie and Oswego Canals, by the side of the present locks, each 225 feet long between the quoins, and 25 feet width of chamber at the water-line of lesser level; the deepening of the canal 1 foot, giving throughout its entire length 8 feet of water. This improvement contemplates the removal of the bench-walls on the eastern division of the Erie Canal, which extend a distance of about eighty miles. The estimated cost of this improvement, as given in the engineer's report aforesaid, is, with all stone locks, \$14,405,888.15; with wood locks, \$12,619,040.15; with wood and stone locks, \$13,049,946.64. His estimate for the enlargement of the Erie Canal from Buffalo to Albany is, with all stone locks, \$11,902,888.15; with all wood locks, \$10,718,040.15; with wood and stone locks, \$10,985,946.65.

State Engineer Taylor gives the relative cost of transportation as follows:

Old Erie Canal, 4 feet water, boats 76 tons, cost 4.14 mills.

Enlarged Erie Canal, 7 feet water, boats 210 tons, cost 2.16 mills.

Re-enlarged Erie Canal, 8 feet water, boats 690 tons, cost 1.04 mills.

The practical capacity of the Erie Canal to more tonnage eastward, with the present locks, is less than four million tons in a navigation season, which is limited by the lockages. The chambers of the present locks are 18 feet wide, and the present class of boats navigating the Erie and Oswego Canals are $17\frac{1}{2}$ feet wide, with a draught of $6\frac{1}{2}$ feet of the 7 feet of water in the chambers of the locks. Through the small space at the sides and under the boat the water in the lock must have time to pass before the boat can fully enter the lock. There are several locks in the Erie Canal of 10 feet lift. During the sitting of the constitutional convention of 1866-'67 there was a breach in the Erie Canal near one of these locks of 10 feet lift, on each side of which there had accumulated a large crowd of boats. A special committee of that convention, accompanied by the division commissioner, was delegated to make a trial-test of the lockage capacity of the canal, which was continued for seventy-two consecutive hours, and the average time for the lockage of boats through

that lock, going eastward against the current, fully laden, was seventeen minutes, and going westward, partially laden and with the current, eight minutes. There are, on a navigation season, about two hundred days of practical canal navigation, equal to two hundred and eighty-eight thousand minutes, in which time, with every moment occupied night and day, seventeen thousand boats of 220 tons average cargo could be locked, giving 3,740,000 tons capacity for eastward movement in a navigation season. By enlarging the locks 25 feet wide, with boats 22 feet beam, carrying 600 tons cargo, the time of lockage would be much quicker and the capacity of the canal would be largely increased. The enlargement of the Erie Canal locks to 25 feet wide, in accordance with the plans and specifications of the State engineer in a special report of 1863 on canal enlargement, transmitted to the legislature February 4, 1864, will give the Erie Canal a capacity to move freight eastward of about 24,000,000 tons, in a navigation season, at less than one-half the present cost.

A canal-boat, of the class now navigating the Erie Canal, can carry as much as a railway freight-train of twenty-three or twenty-five cars, of ten tons each. The average number of laden canal-boats that have been dispatched from Buffalo, Tonawanda and Oswego, during the navigation season of about two hundred and thirty days, has been equal in tonnage to seventy-five railway trains daily, of twenty-five cars each, or two hundred and fifty tons to each train; and with the proposed enlargement of the Erie and Oswego Canals completed, their capacity to pass freight eastward from Buffalo, Tonawanda and Oswego, would be equal to four hundred and seventeen railway trains of twenty-five cars each, carrying 250 tons to each train.

My opinion is that the locks should be enlarged to at least 25 feet wide, with boats limited to 22 or 23 feet beam, carrying about 600 tons cargo. The transportation from Buffalo to New York, including nominal State tolls and carrier's profits, could then be done for \$1.50 per ton of 2,000 pounds.

Q. Three dollars a ton from Chicago to New York?

A. Yes, sir.

Q. How many bushels would a 600-ton canal-boat carry, and what would be the cost from Chicago to New York per bushel?

A. A canal-boat of 600 tons burden would carry 20,000 bushels of wheat and 21,428 bushels of corn, and the cost of transportation from Chicago to New York would be 9 cents per bushel for wheat.

Q. What power do you propose to use for moving boats on the canal and vessels on the lakes?

A. Steam-power, giving six days for the voyage from Buffalo to New York, and four and one-half days from Chicago to Buffalo, or ten and a half days from Chicago to New York.

By Mr. SHERMAN:

Q. What power on the canal—propeller or chain-cable?

A. I do not know what will be the most practicable; but I know from experiments I have witnessed, that the direct application of power on the chain-cable gives an economical use of power. I believe, from the experiments I have seen and the accounts I have examined of experiments made by others with the chain-cable system of towage, that boats can by this method be moved at the rate of three to three and one-half miles per hour very cheaply, more cheaply than by the ordinary screw propeller, as with the chain-cable the application of power is direct and with-

out loss, while by the application of the screw propeller in shoal water the loss of power is between 50 and 60 per cent., as per reported tests on the Erie Canal and on the Grand Dublin Canal in Ireland.

By the CHAIRMAN:

Q. Can you state why the present system of warehouses, or the want of warehouse facilities, is in existence here; why elevators are not built here, as they are in the Western States?

A. Because of attachment to old notions and old methods of business, causing difficulty in substituting new improved and labor-saving methods. It is only a few years since that all the grain arriving at the port of New York was handled in half bushels, the measurers weighing every tenth or twentieth half bushel, to arrive at the quantity by both weight and measurement. It is only ten or twelve years since grain began to be handled here by steam elevators. The measurers were opposed to the introduction of elevators for handling grain, and when the first attempt was made for their introduction the measurers and laborers of the half-bushel era made war on the innovation, and all business was suspended for a week or more. The canal-boats arriving could not be unladen, and the ocean steamers and sailing-vessels could not take in grain cargoes, as the measurers during the contest would not work by the old half-bushel method and would not permit the employment of floating elevators to make the transfer from canal-boats to ocean-vessels, or from canal-boats into grain warehouses. There was during a considerable time an entire suspension of business connected with the canal and ocean commerce. The exporters were slow to believe that grain could be transferred by steam at the rate of four or five thousand bushels per hour, as was then done at Buffalo, Chicago, and other lake ports. The owners of the steam elevators appealed to the mayor for protection in their use, but the mayor averred that he was powerless to give aid for their protection. A detailed force of the police was asked for, but that force was in sympathy with the horde of measurers, and was not available for protection. The owners of the elevators then asked the mayor to give them the power to protect themselves, which was granted. The steam-boiler of the elevator was perforated and stop-cocks inserted, to which were screwed hose and pipes, and when this preparation had been completed the work of elevating was commenced by the floating elevator, which was no sooner in operation than down swooped one or two thousand measurers with a picket force in advance to take possession of the elevator.

The hose-pipes screwed on to the boiler were brought in requisition and hot steam was played on the attacking force and dispersed it. This broke the back of the rebellion among the measurers, and since that time the half bushel has been dispensed with, and the grain since that time has been mostly handled through the medium of floating or stationary steam-elevators.

The grain-storage capacity in New York is now about 12,000,000 bushels, of which the Grain Warehouse Company's stores and elevators, free and bonded, have 8,000,000 bushels storage capacity for grain. The latter comprises Nos. 2 to 28 Commercial wharf, Atlantic dock, Brooklyn; Nos. 1 to 11 Clinton wharf, Atlantic dock, Brooklyn; Nos. 70 to 92 South pier, Atlantic dock, Brooklyn; and Nos. 1, 2, and 3 Columbia stores, South Ferry, Brooklyn. There are besides a large number of floating-elevators. These grain warehouses and floating-elevators all transfer grain by steam power. Some of the grain warehouses have facilities for blowing, screening, and drying grain, comprising all the late improvements.

Granaries in the port of New York—Rates established May 1, 1873.

STORAGE.

Storage, labor, and weighing sound grain, except oats and malt, including guarantee first ten days, $1\frac{1}{2}$ cents per bushel.

Oats and malt, first ten days, $\frac{3}{4}$ cent per bushel.

Storage, every succeeding ten days, $\frac{1}{4}$ cent per bushel

INCIDENTAL CHARGES.

Screening and blowing grain, $\frac{1}{4}$ cent per bushel.

Weighing and transferring in store, including screening, 1 cent per bushel.

Spouting on board of ships, including trimming, \$8 to \$10 per 1,000 bushels.

Bagging on board ship, &c., \$6.25 per 1,000 bushels.

Delivering on board of coasting vessels, if trimmed, 25 cents per 100 bushels.

Delivering on board of coasting vessels, if not trimmed, 15 cents per 100 bushels.

Shovelling for preservation, 20 cents per 100 bushels.

Bagging, bag-holding, tying, and loading, each $\frac{1}{4}$ cent per bushel.

Bagging, with specific weight in each bag, $\frac{3}{4}$ cent per bushel.

Boats and vessels, unloaded by elevators, including trimming, $\frac{3}{4}$ cent per bushel.

The railways have no grain warehouses or stationary elevators at their terminal points in this city or on the Jersey shore opposite this city, but soon will have them as one of the prominent, and, I think, two are soon to have large grain warehouses of a million bushels capacity each for the storage and transfer of grain, receiving it directly from the cars and delivering it directly to ships, at the terminal points of the several railways. If two or more of the railways provide these facilities, all will be impelled to do so, or take a secondary position as carriers of grain. These additional facilities will probably somewhat diminish the cost of the transfer of grain at this port. It will give three or four million bushels additional storage capacity, and inaugurate a competition between the new and old facilities that will have a tendency to reduce the cost.

By Mr. SHERMAN:

Q. I will ask you now if your board is not rather opposed to them?

A. I cannot say as to that; perhaps some members of the produce exchange, who are interested in elevators at other points, might wish the railways would not build elevators at their terminal points.

Mr. SHERMAN. Is there any opposition? I think the desire of all members of the New York Produce Exchange, with perhaps the exception of those owning or interested in the present facilities, would be to have the cost of transfer here as cheap as possible.

By the CHAIRMAN:

Q. What is the present cost of transfer here of grain?

A. About $2\frac{1}{2}$ cents per bushel.

Q. From cars to steamer?

A. Yes, sir.

By Mr. DAVIS:

Q. How much from boat to steamer?

A. I think about $1\frac{1}{2}$ cents from boat to steamer. It should be done at half a cent per bushel or at most $\frac{3}{4}$ cent per bushel. The transfer used to be made at Buffalo for half a cent per bushel, $\frac{1}{2}$ cent being paid by the lake vessels and $\frac{1}{4}$ cent by the grain. The facilities for the transfer of grain at Buffalo are very large, larger than at any other point in the country. There are thirty-two grain-elevators in that city. I have witnessed there the arrival of three and one-half million bushels of grain in forty-eight hours by lake vessels, the whole of which was unladen into store or transferred to canal-boats in two days and the lake-fleet delivering it was started up the lake again before the expiration of the forty-eight hours. The canal-boats at Buffalo receiving the grain by transfer from the lake vessel or from store do not pay anything for the transfer, except perhaps for trimming in the canal boat when the grain is spouted into it. In many cases this trimming is done by the crew of the canal-boat. When others are hired to do it the charge is or used to be \$1.50 to \$2.

Q. Is there any difference in the condition of grain arriving here by boat or rail?

A. There is sometimes. If the grain is dry and in order when shipped I do not know that there is any difference. Shippers prefer corn coming by canal if it is in order when delivered here, as it is a pretty good guaranty that it will make the ocean voyage without damage on the route, but that received by rail in small quantity there is less certainty of its remaining in order on the passage to Europe. When corn or wheat comes fifteen hundred miles by lake and canal and is delivered here in order shippers are pretty well assured that it will come out in good order on the other side, so that the advantage is rather in favor of that received by water if the grain is designed to be exported.

By Mr. CONKLING:

Q. What proportion of the total tonnage you spoke of comes to the sea-board by artificial water channels and what proportion by rail?

A. I cannot give the exact proportion. About nine and a half million tons is annually delivered at sea-board ports by all routes north of the Ohio river, which is about the aggregate of the eastward through movement by all routes rail and water. The delivery of flour and grain at New York for the three years ended December 31, were:

	1870.		1871.		1872.	
	By rail.	By water.	By rail.	By water.	By rail.	By water.
Flour, barrels.....	3,323,407	846,526	3,006,998	572,861	2,569,127	473,780
Wheat, bushels.....	6,229,456	17,673,803	4,947,460	21,847,404	5,285,363	10,951,270
Corn, bushels.....	4,331,637	4,898,274	6,668,214	20,127,872	10,466,638	30,335,919
Oats, bushels.....	3,893,774	5,772,180	6,384,383	6,039,246	7,410,377	51,047,750
Barley, bushels.....	236,474	3,721,755	622,279	2,389,671	995,845	2,968,596
Rye, bushels.....	81,518	476,263	23,950	1,048,693	14,767	478,031
Peas, bushels.....	15,560	182,954	31,253	83,523	95,553	87,039
Malt, bushels.....	312,179	742,940	257,352	534,994	437,529	708,528
Total grain, bushels...	15,100,598	33,468,169	18,954,896	52,071,673	24,697,072	50,570,133
Flour to bushels.....	16,617,035	4,232,630	15,034,990	2,864,305	12,845,635	2,369,900
Grand total, bushels ..	31,717,633	37,700,799	33,989,886	54,935,978	37,542,707	52,939,033

RECAPITULATION.

	By water.	By rail.	Total bushels.	Per cent. water.
1870, bushels.....	37, 700, 799	31, 717, 633	69, 418, 432	54. 3
1871, bushels.....	54, 935, 978	33, 969, 886	88, 925, 864	61. 8
1872, bushels.....	52, 939, 033	37, 542, 707	90, 479, 740	58. 5

By Mr. NORWOOD:

Q. Answering generally, what do you estimate the relative cost of transportation by water and by rail to be?

A. The cost, as given by State engineer, on the old Erie Canal, was, with boats of 76 tons, four feet of water, 4.14 mills per ton per mile; with present Erie Canal, 7 feet water, boats 210 to 230 tons, 2.16 mills per ton per mile; with re-enlarged Erie Canal, 8 feet water, 690-ton boats, 1.04 mills per ton per mile; on the Hudson River, with barges drawing 7½ feet of water, carrying 500 tons to 690 tons, ¾ to 1 mill per ton per mile.

The rate on the lakes, from Chicago to Buffalo, for the seven years ended with 1872, including the carriers' profits, has been 2½ mills per ton per mile. With all large-class vessels on the lakes carrying 1,500 to 2,000 tons each, the rate, including the carriers' profits, will not exceed 1½ mills per ton per mile.

The State engineer gives the cost of movement on the Erie and Central Railways, including the carriers' profits, as given in the canal auditor's report, as follows:

Years.	Per ton per mile.	Years.	Per ton per mile.
	<i>Cents.</i>		<i>Cents.</i>
1856.....	2. 725	1865.....	3. 035
1857.....	2. 79	1866.....	2. 685
1858.....	2. 255	1867.....	2. 285
1859.....	2. 15	1868.....	2. 258
1860.....	1. 90	1869.....	1. 90
1861.....	1. 845	1870.....	1. 615
1862.....	2. 055	1871.....	1. 56
1863.....	2. 215	1872.....	1. 605
1864.....	2. 53		

For seven months of the year, during the period of open canal navigation, the rates are much less than indicated by the foregoing averages for the year, and during the five months of the year in which canal navigation is closed by frost, the rates largely exceed the foregoing season averages.

The question has been frequently propounded, how cheap can railroads carry freight without loss? During the summer-months, when there is competition from the water-routes, all the great through-lines of railway reduce their tariffs about four dollars per ton below their winter-tariff rates, and in the former frequently carry freight in competition with the water-lines at lower rates than can possibly pay a profit, or lower than they can carry all classes of freight for. Wheat has been transported from Buffalo to New York by rail, during the summer, in competition with the Erie Canal, at 12 cents per bushel of 60 pounds, which is equal to \$4 per ton of 2,000 pounds, or on a distance of four hundred and forty-one and three-fourth miles, from Buffalo to New

York, by the Central and Hudson River Railways, is 9 mills and $\frac{5}{100}$ of a mill per ton per mile. That this rate is lower than a railway can do business for, at a profit, will be shown by the results of a year's business on the Central and Hudson River Railways at this rate for transportation. These railways transported during the fiscal year ended September 30, 1872, 4,393,965 tons, way and through, east and west, and the mileage of this freight was equal to 1,020,908,885 tons transported one mile. This mileage, at 9.05 mills per ton per mile, will produce a revenue of \$9,239,225.41.

The annual financial statement of the New York Central and Hudson River Railways for the fiscal year ended September 30, 1872, was as follows:

EARNINGS.

From passengers	\$6,662,006 82
From freight	16,259,646 79
From miscellaneous sources	2,659,022 26
Total	25,580,675 87

DISBURSEMENTS.

For maintenance of way	5,153,497 67
For maintenance of rolling-stock	4,150,599 23
For transportation expenses	7,142,339 40
For interest	1,030,371 63
For roadways, bridges, &c.	712,236 84
For rent of leased roads	131,996 66
For two dividends of 4 per cent. each	7,244,831 78
Total	25,565,873 28

The receipts for freight were \$16,259,646.79, but if the business of the year had been done for a uniform rate of 9.05 mills per ton per mile, the revenue from freight would have been only \$9,239,225.41; and if this sum had been placed on the account-current for the year, these roads would have paid from their earnings their current expenses, interest, rent of leased roads, &c., and would have had a surplus for dividends on \$89,428,300 stock of \$244,410.40, or about $\frac{1}{5}$ of one per cent., besides a surplus \$14,802.64.

If a uniform rate of $1\frac{3}{8}$ cents per ton per mile had been received on a mileage of 1,030,908,885, it would have produced a revenue of \$14,037,497.16. Assuming that the cash cost of these two roads is \$60,000,000, and that \$29,428,300 is watered stock, and that a dividend of 8 per cent. per annum, or \$4,800,000 aggregate dividend, be paid on the cash cost of these roads, and all other items left unaltered in the annual financial statement, except the freight earnings and dividend, a uniform rate of $1\frac{3}{8}$ cents per ton per mile would have paid the dividend of \$4,800,000 on \$60,000,000 of cash stock, and would have left a balance for operating the roads of \$237,484.79. It is evident from the foregoing statements that about $1\frac{3}{8}$ cents per ton per mile for freight is about as low as any railway can afford to carry freight, even if the road is built on a cash basis, and even this rate is lower than could be afforded, taking the operating expenses for a period of five or ten years. These two railways can make a more favorable showing than any other two railways in the country. Most railways less favorably situated for freight and passenger traffic could not afford to carry freight for a uniform rate of less than $1\frac{1}{2}$ cents per ton per mile.

The railway charges on freight on 1,000 miles of road would be—

	Per ton.
At 7½ mills per ton per mile.....	\$7 50
At 8 mills per ton per mile.....	8 00
At 8½ mills per ton per mile.....	8 50
At 9 mills per ton per mile.....	9 00
At 9½ mills per ton per mile.....	9 50
At 10 mills per ton per mile.....	10 00
At 10½ mills per ton per mile.....	10 50
At 11 mills per ton per mile.....	11 00
At 11½ mills per ton per mile.....	11 50
At 12 mills per ton per mile.....	12 00
At 12½ mills per ton per mile.....	12 50
At 13 mills per ton per mile.....	13 00

The summer rate on fourth-class freight from Chicago to Baltimore and Philadelphia is \$8, to New York \$9, and Boston \$10, while the winter rate on the same class of freight is \$11 to Philadelphia and Baltimore, \$12 to New York, and \$13 to Boston. Without some radical improvement in railway transportation resulting from new inventions, diminishing the cost of operating or lessening the wear and tear of rolling stock, rates of freight from the far interior by rail cannot be much, if any, less than they have been in the past.

The railway charges for services rendered are, for long distances, too onerous for the prosperity of the producing classes, especially for heavy products of great bulk and cheapness. The vast interior of the continent, north and south, east and west, holds within its embrace beautiful streams, majestic rivers, and broad lakes, so distributed that by artificial aids they can be navigably connected for the great and grand purpose of carrying on the interior commerce of the continent with the sea-board. The remedy for what the railway system cannot do cheaply enough to meet the wants and necessities of the people, is to provide great interior national water highways, equal in magnitude to the railway system. This would involve the improvement of the extended lines of steamboat navigation on the navigable-river system of the interior, and the construction and completion of the artificial works proposed, and the re-enlargement of those already in operation, connecting the river system with that of the lakes, and the lakes with the ocean, on a scale of magnitude equal to the present and prospective requirements of the interior commerce of the whole country.

Complete this national water system, with the railway system as feeders to it, and the results to be attained will be so magnificent as to claim the admiration of the world; so attractive as to invite to us its best people and its greatest wealth, and so powerful for good as to bind the whole country together in indissoluble bonds for all time.

BENJAMIN P. BAKER, first vice-president of the New York Cheap Transportation Company:

MR. CHAIRMAN AND GENTLEMEN: I regret that our president is not with us this afternoon. I should be glad to have him address you. I have but a word to say. As you are aware, and the honorable senators who compose the committee are aware, we are very young as an organization. You were present, as I believe, at the christening. We are not a week old. We have been for years enduring the evils of the present system of canals and railway management, and have a feeling sense that something must be done. It was this feeling that seemed to have entered the breast of almost every merchant who originated the

call for this meeting and has brought us to our present position. We are learners rather than setting ourselves up to teach. We have determined to try to see the particular cause of the trade of New York leaving us so systematically as it is doing, and are satisfied that the necessity exists of a double-track railway, of increasing our water communications through the State by canals, and a great improvement in our terminal facilities.

The grain arriving by canal is now cared for perhaps as well as it can be. The system is a very good one, and I hear no complaint of it. I have had some experience in the storage of grain in the warehouses, and there is no complaint, but the arrival of grain by railways is subjecting the merchants to a great deal of trouble in its delivery, delays and often loss.

It has been inquired why it was that we had no ware-houses on the railways. It is simply because the railway companies have not built them, though, as you are aware, the railway companies own all the water-front where their railroads terminate, and it would be impossible for any private citizens to build railways that should have the advantage of water-front and be connected; build elevators where they could have the connection by cars and by steamers, unless they bought of the railroad company, or by some contract entered into by the two, and that could only be done, probably, by giving them large rebates, as was the case in some contracts entered into by the Erie road, and not fulfilled, and our only hope is to encourage, and, by our exertions, to induce the railway companies to build these elevators.

We want to handle our goods much more cheaply in New York, and, turning our attention to that, we shall develope every effort and every plan that shall curtail the expenses. We think the handling of goods can be done at half the present price.

In regard to the railway system we are decidedly in favor of double-track railways, and shall do all that we can to encourage the people of New York to get some plan to restore to us the commerce we formerly enjoyed.

Mr. Thurber will say a word to the committee on one or two points upon which you complimented us in asking us to give our views, and I shall now introduce him:

F. B. THURBER, secretary of the New York Cheap Transportation Company.

Mr. CHAIRMAN. The principal things we have to say are in regard to some of the points you inquired about. One word in regard to the fast-freight lines. I have prepared a little statement showing the impressions that the mercantile classes here now have. They may not be strictly reliable in all cases, but will only be interesting as regards the general estimation in which these lines are held. It perhaps would be hard to get at just the status of all these lines, except by a committee authorized to send for persons and papers.

In your communication of August 6, asking information as to the workings of the fast-freight lines, you state that it is represented to you that our system of railway transportation makes it necessary to employ such organizations as the Red Line, Blue Line, Empire Line, National Line, &c.; that if the railroad companies allow their cars to be run all over the country they would often find themselves without stock; that the administrative work of taking care of the roadway, locomotives, and employes, is the proper work of the railroad company; that great charges are taking place in our system of railway economy, &c.

The above are the arguments used by the champions of these lines to defend their system, but the opinion prevails among business men that they are fallacious. There are different types of these lines, some owning their own cars and some using the cars of the roads over which they run. It appears, however, that nearly all of them have, in their board of management, officials of railways over the tracks of which they run, and they are very generally looked upon as a *Credit Mobilier* arrangement by which the officers of railways are enriched at the expense of the stockholders of their roads. Certain it is that those lines maintain expensive organizations in the way of officers, officials, &c., that a very expensive system of drumming for freight exists; that the managers of these lines accumulate wealth rapidly, and that the number and extent of these lines is yearly increasing; that the stockholders of the railways claim that they get but small dividends while shippers and receivers of freight complain of high rates. It is also certain that they tend to interfere with the regular freight business of railways, instances are not unfrequent in the West of shippers of grain applying at railway offices for cars, and are told they have none, but the fast-freight line across the street can supply them with any number. Thus, if no other evil in connection with this system exists, the shippers of freight have to support two distinct organizations, and in many instances two sets of stockholders.

In regard to the care of roadway, locomotives and employés being the legitimate work of the railway company, as well might it be said that the legitimate business of A. T. Stewart is to care for his buildings, machinery, and minor employés, and let some of his principal employés select certain remunerative departments of his business and run them to suit themselves, because Mr. Stewart is unable to keep track of his business. It is quite probable that if Mr. Stewart was foolish enough to do such a thing, and his employés became rich and independent, that both branches of the business would desire to make money, and there being a dozen instead of one person to receive dividends, the public would not get their goods on quite as well a margin of profit as they now do, and especially would this be the case if a certain section of country was *obliged* to buy their goods at that particular establishment, as certain sections of country are obliged to send their merchandise over the roads running through that section.

So far as the business management of railways are concerned, the same fundamental rules apply that are necessary to the management of private business. We believe that the plan of maintaining expensive separate organizations adds materially to the cost of transportation, and that the same efficiency in operating could be arrived at by establishing inexpensive bureaus in the general organization, that is now arrived at by the cumbrous and expensive system of separate organizations. These remarks also apply to sleeping car and express companies.

In regard to the watering of stocks or inflation of railroad obligations, which was one of the points also touched upon, I would say that a large portion of the ideas embodied in this communication were taken from data compiled by Mr. George O. Jones, of Albany, who, I believe, has furnished the committee with a copy of pamphlet, and which, as time is valuable here now, it may be infringing too much upon your patience to read. I have made some extracts which, as they are not long, I might, perhaps, read to you. On pages 4, 5, and 6 of the pamphlet you will find the very point embodied here:

"It is a notorious fact that the greater part of the corruption to be found in our halls of legislation proceeds from the great corporations while seeking legislation

opposed to the interests of the public. As an evidence of the great amounts annually worse than squandered in this way, the following extract from the report of the legislative committee, which recently made the investigation into the management of the Erie Railway, may be interesting and instructive:

"It is further in evidence that it has been the custom of the managers of the Erie Railway, from year to year in the past, to spend large sums to control elections and to influence legislation. In the year 1868, more than \$1,000,000 was disbursed from the treasury for "extra and legal services." For interesting items see Mr. Watson's testimony, pages 336 and 337.

"Mr. Gould, when last on the stand and examined in relation to various vouchers shown him, admitted the payment, during the three years prior to 1872, of large sums to Barber, Tweed, and others, and also large sums drawn by himself, which might have been employed to influence legislation or elections; these amounts were charged in the 'India rubber account.' The memory of this witness was very defective as to details, and he could only remember large transactions; but could distinctly recall that he had been in the habit of sending money into the numerous districts all over the State, either to control nominations or elections for senators and members of assembly. Considered that, as a rule, such investment paid better than to wait till the men got to Albany, and added the significant remark, in reply to a question, that it would be as impossible to specify the numerous instances, as it would to recall to mind the number of freight cars sent over the Erie road from day to day. (See testimony, p. 556.)

"It is not reasonable to suppose that the Erie Railway has been alone in the corrupt use of money for the purposes named; but the sudden revolution in the direction of this company has laid bare a chapter in the secret history of railroad management, such as has not been permitted before. It exposes the reckless and prodigal use of money, wrung from the people to purchase the election of the people's representatives, and to bribe them when in office. According to Mr. Gould, his operations extended into four different States. It was his custom to contribute money to influence both nominations and elections.

"What the Erie has done, other great corporations are doubtless doing from year to year. We have here simply an acknowledgment of the fact. Combined, as they are, the power of the great moneyed corporations of this country are a standing menace to the liberties of the people.

"The railroad lobby flaunts its ill-gotten gains in the faces of our legislators, and in all our politics the debasing effect of its influence is felt."

The report further says:

"This vast interest has grown up mostly within the last twenty-five years. And the railroad system, in its material aspects, is, to-day, a proud monument to the industry, enterprise, and progress of the country and of the age, and should receive generous treatment. But in this free growth there is danger. Restrictions which seemed ample when these enterprises were in their infancy, and when the country was struggling for internal development, are now quite inadequate. At the time of the formation of our governments, State and national, and for many years afterward, the water routes were the great channels of internal commerce; no one dreamed that they could ever be controlled by a few men. But railroads have revolutionized traffic; and the danger that was not then imagined is now an existing calamity. These franchises, which were granted to subserve public uses, and to which private interests were compelled to yield, have been, in many cases, perverted to speculative purposes, and the establishment of practical and grinding monopolies, reducing to a moiety the income of the producer, and increasing to exorbitance the prices of the necessities of life to the consumer.

"Corporate wealth has gone on increasing to an alarming extent, vast private fortunes have been accumulated by the men who control and operate our railways, and these advantages they are not quick to relinquish. The business interests of the country are demoralized by the mania of stock gambling rendered hazardous by the constant watering of stocks, by which a fictitious value is imparted to railroad securities, which would otherwise be stable, and traffic is hence unduly taxed to secure them a value. Another evil is the indiscriminate bonding of towns and municipalities for railroad construction. Withal come rivalries and the continual reaching out for additional advantages through legislation.

"The evil is deeply seated, and no superficial remedy will be adequate for its correction. No law that the committee can recommend at this late day of the session will reach the entire case, but they will take the liberty to suggest that, in their opinion, the relief will be found in some enlightened system of general railway legislation, regulating the rate of transportation, prohibiting the issue of fictitious stocks, and punishing with heavy penalties the misappropriation of the funds of the company by the managers thereof, whether to their personal uses or to corruptly influence legislation affecting their interests.

"There should also be enacted some uniform system for the keeping of railroad accounts and the manner of declaring dividends, so that, while on the one hand the stockholder may share in the actual profits, on the other, the obligations of companies shall not be increased from year to year by loans to make good fictitious statements of net earnings. On one subject, at least, your committee believe that legislation should be had without delay. There is now under existing statute absolutely no security to stockholders in regard to the leasing of one road by another. A majority of the board of directors may, without consent of their stockholders, lease for such a period of years, and upon such terms as would be equivalent to a consolidation of interests.

"Your committee believe that some proper restriction is necessary not only to protect the public, but the railroad interest itself, and the law should apply not to one company alone, but should be general in its scope. They have therefore prepared, and presented in connection with their report, a bill regulating leases of connecting roads, and prohibiting the leasing of competing parallel lines.

"In conclusion, you committee have endeavored to discharge the duty delegated to them so far as time and circumstances would allow, with a desire to deal justly by all parties, and herewith submit the evidence taken, with their conclusions thereon, respectively for the consideration of the House.

"ISAAC H. BABCOCK,
 "C. S. LINCOLN,
 "AMHERST WRIGHT, JR.,
 "CHARLES CRARY,
 "JACOB B. CARPENTER,
"Select Committee.

"MAY 16, 1873."

Under date of August 6, 1873, while acting as chairman of the temporary committee appointed by the merchants, to call a mass meeting on the transportation question, I received a communication from you requesting information in regard to the "Watering of Stocks" and "The operation of fast-freight lines." In answer to the request to furnish specific information on the first point, I would say that strictly reliable and authentic figures can probably only be obtained by a committee authorized to send for "persons and papers," but the facts are sufficiently notorious that substantially correct information on this point is plenty. In a pamphlet issued about a year since by George O. Jones, of Albany, N. Y., we find the following:

The New York Central Railroad Company was organized in 1853. Its road consisted of several roads built by people living along their lines connecting the principal cities between Albany and Buffalo. The capital stock of the companies representing these roads, at the time of their consolidation, amounted to \$20,799,800, on which it was claimed that \$16,852,870 had been paid in. Their funded and floating indebtedness at that time was \$2,511,105. That the amount claimed to have been paid in was largely in excess of the actual cost of the property represented, there can be no doubt. To illustrate: The capital of the Utica and Schenectady Company was put in at \$4,500,000, while the facts in relation to that company are, that it never issued any bonds; that its capital stock never exceeded \$2,000,000, and that \$1,500,000 was every dollar ever paid by the stockholders of that company out of their own funds for the construction and equipment of their road. It is true the stockholders of that company paid the additional \$500,000, making its full paid capital \$2,000,000, but not until the company had declared and paid to its stockholders an extra cash dividend amounting to that sum out of the surplus earnings of its road. The additional \$2,500,000, (making the \$4,500,000,) it was claimed, had been expended on the property of the company, also out of the surplus earnings of its road.

The Utica and Schenectady road was about 78 miles in length, or one quarter that of the New York Central after its consolidation; therefore taking the actual cost of that road (\$1,500,000) as a basis, it will be found that the cost of the whole line of the Central did not exceed \$6,000,000. Assuming, however, that it cost \$10,000,000, which it never did, and, admitting the cost of the Hudson River road (now consolidated with the New York Central and known as the New York Central and Hudson River Railroad,) to have been what it purported to be in 1851 when it was opened over its whole line, viz, \$9,305,551.09, and add \$2,000,000 paid in 1864 and \$2,000,000 said to have been expended on the Athens branch of the central, and it will be found that the entire actual cost of the property now represented by the New York Central and Hudson River Railroad Company (to its stock and bondholders) was less than \$25,000,000. Interest was always regularly paid on all bonds issued by the companies consolidated into that

company, and liberal and regular dividends on all stock except about \$3,750,000 outstanding against the Hudson River company during the first thirteen years of its existence. To cover that deficiency that company issued in 1864 \$4,000,000 of its stock, for which only \$2,000,000 was paid by its shareholders, since when regular dividends have been paid on all stock outstanding against it; therefore investors in those securities have no reason to complain on that score. The obligations outstanding against the New York Central and Hudson River Railroad Company amount now to \$105,000,000, or more than four times the actual cost of its property to its stock and bondholders.

About one year ago (in 1871) the Lake Shore and Michigan Southern Railroad Company issued to its shareholders \$15,000,000 of its stock upon their paying therefor \$5,000,000 or 33 $\frac{1}{3}$ per cent. on the amount issued. *Before* that issue was made its stock was already outstanding for more than \$4,000 for every \$1,000 *actually* paid by the stockholders of the companies consolidated into that company, and \$25,000,000 would more than cover all sums ever paid (by its stock and bondholders) for the property it now represents. The present outstanding obligations of that company amount to \$75,000,000.

Every intelligent man in this country understands that the Union Pacific Railroad was built by a combination of corrupt men inside and outside of Congress. That the Government issued its bonds to aid in constructing that road to a greater amount than was ever actually expended in its construction; that it gave to the company representing it lands worth ten times its cost. Yet that company has issued a number of other obligations, among which is \$35,000,000 of its stock (for which no pretense is made that one dollar has ever been expended) which is now (1872) being sold in the markets of this country and Europe, and treated as if was an honorable obligation, on which the future internal commerce and travel of this country can be taxed \$3,000,000 a year, through all time, to pay dividends.

Within the last six years there has been issued over \$60,000,000 of the stock of the Erie Railway Company, and no one will dare to say there has been \$5,000,000 of this vast sum expended on its own property for the public welfare. It is well known that this stock was sold at from 20 to 40 cents on the dollar, and that its proceeds were appropriated to the *personal* uses of those who issued it. That vast private fortunes were suddenly acquired by all who were prominently connected with the management of that company at the time this stock was issued, and that everything went along swimmingly with them until certain prominent public men in the city of New York, with whom they were intimately associated, fell under the ban of a just public indignation, when immediately a cry went up from the city and State demanding that the legislature should pass laws removing the directors of the Erie Railway Company, and others to protect the interests of its stockholders. These *unselfish* and *patriotic* stockholders, for whom so much public sympathy was manifested, would not consent, however, to a proposition urged before the railroad committees of both branches of the legislature, viz, that the capital of that company should be reduced to the amount paid for its stock. On the contrary, their modest demand was, (what to the credit of those who issued this stock it must be said they never undertook to do, but which the present management is trying to accomplish,) viz, tax the commerce of this city and an innocent public along the line of that road \$5,000,000 a year to pay dividends upon the par value of stock purchased at 20 cents on the dollar by the injured innocents and shylocks who congregate in London, Frankfurt, and Wall Street.

Mr. Jones states that the data from which his statements are made in regard to the New York Central Road are to be found in the early reports of the State Engineer and Secretary of State, and that the details in regard to the Utica and Schenectady Road he obtained from the late Mr. Erastus Corning and Mr. Chauncey Vibbard, who is now a resident of this city.

The pretext under which the various waterings of the stock of the New York Central and Hudson River road, and indeed most other roads have been made is, that the increase of the value of their real estate and other property gave them the right to do so; but those who advance this reason ignore the fundamental law which gave them existence, that they are public institutions. Railroads are endowed with the right to take private property for public use, and upon the amount of money actually invested everybody is willing that they should have liberal dividends. But if that property increases in value a hundred fold it is for the benefit of the public and the corporation has no right to that increase in value. If additional buildings are necessary let

bonds be issued to the extent necessary, and let the charges on freight and passenger traffic be arranged so the interest on those bonds can be regularly paid, but no road has any right to inflate their stock a hundred per cent., and then raise their tariffs high enough to pay dividends upon such inflated securities. Yet this has been done and even apologists are found for the capitalizing of surplus earnings, which in plain English means that the charges for transportation have been exorbitantly high and a surplus is thus wrung from the people, then stock is issued for this surplus, and, if necessary, rates are again raised to pay dividends upon this stock, which is about equivalent to stealing money from a man and asking him to pay interest upon the very money which has been taken from him.

Whatever may be the pretext for watering the capitol stock of a public corporation it is a notable fact that the real motive is to divert public attention from the fact that it is paying larger dividends than it should, and larger than is for the public good; in other words it is levying a heavier tax upon the people than they can or ought to stand, hence the desire to divert attention.

The remedy which suggests itself to our minds is the passage of a general law relating to railroads, prescribing a uniform system of keeping accounts and prohibiting, under severe penalties, the watering of stock or the consolidation or leasing of competing lines.

There are also some points which have been put forward which I desire to mention here.

In regard to our views on this question they are certainly very crude and ill-digested. The people have not combined a sufficient length of time here to present, in the systematic way in which they could be, the points we desire to establish. The railroad side of the question is more systematically set forth, probably, by more able individuals.

It was remarked here yesterday, I believe, by some gentlemen that railroad men were the smartest men in this country, and I think everybody will be willing to admit that fact.

In regard to desirability of railway lines and canal lines in solving this question of transportation it has been remarked, I believe, by a previous speaker that both, in his estimation, would answer. Many persons take the ground that we have to look to canals entirely for our relief, but it occurs to many of us merchants in New York that it will be necessary to have both, and that there is one great point to be taken into consideration in regard to the separation of freight and passenger traffic.

All of our estimates as to the capacity of railways for carrying purposes, and the cost of such transportation, have been based upon the result of the system of mixed traffic, as it now prevails, and practical railroad men are not wanting who demonstrate, on paper, that where roads are devoted exclusively to freight, built for that purpose, and operated in a manner appropriate to the carrying of freight, it can be done as cheap or cheaper than it can be done by canal, and by a great saving of time.

It was mentioned also that ultimately we must have five or six different double-track roads exclusively for freight. There is one point which I desire to bring forward for the consideration of the committee, and it is this: that so far all the actual efforts that have been made, or are under way for the doubling up of our freight facilities, or furnishing double-track roads exclusively for freight, are being done in the interests of private parties.

It occurs to me that if we should have several double-track roads

exclusively for freight, and if none of them were owned or controlled by the people, that the saving which would result from such facilities would very largely go into the pockets of railway corporations instead of inuring to the benefit of the people; and although there seems to be a feeling throughout the country that it is desirable for Government to have as little to do as possible with the construction of avenues of this kind, yet it is a question whether the people can realize as fully the benefits of roads exclusively for freight if constructed by private individuals, as they could if constructed and owned by the nation. The financial difficulties in the way of constructing such roads would be for private individuals very considerable. We can see that in the difficulty that is now being experienced in floating the Northern Pacific financial scheme, and any road built by private enterprise must necessarily have its stock on the market in Wall street constantly. There is nothing to prevent the present wealthy corporations from gradually absorbing that stock until they obtain a controlling voice in the management, which might interfere very seriously with the competition, which it is very desirable that such a road should give. I merely bring that forward as a point to be considered, not taking the ground that it is absolutely necessary for the Government to do it.

The increase of terminal facilities here in New York is a point which has been canvassed a good deal, and, as Mr. Baker remarked, is one of the principal points to which this recently-formed association will give their attention. This association is designed to combine all trades and different interests here in New York, and already it has in its list of members the leading trade bodies and trade interests.

Statement of Mr. George O. Jones.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: In discussing the question under consideration, I should like, with your permission, to present it in a somewhat different light from any in which I have heard it presented during your deliberations. In doing so, permit me to prelude by stating that the views and opinions to which I shall endeavor to give expression have been endorsed by over sixty thousand voters of this State, through petitions to its legislature.

That they have been incorporated to some extent into the platforms of new political organizations being formed throughout the country, and, as I am informed, were the basis on which the Cooper Institute meeting was organized, out of which grew the "New York Transportation Association" just represented by Messrs. Baker and Thurbee before your honorable committee, such an indorsement encourages me to ask for them your candid consideration.

Gentlemen, the duties of this committee should not, in my judgment, end with any superficial investigation of the great question of cheap transportation. It will be a sad disappointment to the people if your report should be restricted within such narrow limits as relates to the details of railroad management, the application of new motive-power on canals or the regulation of commerce between the States, unless, it should go back of all such details and recommend specific remedies for present abuses and positive enactments for the future government of all public highways, such enactments to be based on the fundamental principle of public use, on which the whole question of cheap transportation rests.

Public use as you are aware is defined to be, "in contradistinction to private use." In regard to that provision of the constitution which

says "private property may be taken for a public use," and under which all artificial public highways are permitted to be built, one of the ablest judges this country or the world ever produced, says, the right of eminent domain, or to take private property for a public use, being arbitrary, is barely admissible under our system of free government, and can only be tolerated or obtain a standing in court, when all acts done under it are based on strict justice and for the public welfare.

The highways of a country are to the body politic what the veins and arteries are to a human body. Unfold a map showing the rivers, lakes, railroads and canals of this country, and place it alongside of one showing the veins and arteries of a human being, and the resemblance will be found to be most striking. The laws regulating in either case are still more similar in their character; for to enjoy perfect health circulation must be perfect throughout the whole body. Clog any portion of it and immediately that portion becomes diseased and its usefulness is impaired from that cause; or if the blood becomes weak and watery, and proper remedies are not applied to correct its tendency, it will soon undermine the strongest constitution and cause the death of the person so afflicted. Just so in relation to public highways. Clog commerce by imposing oppressive burdens on the people for transporting their products to a market, hamper them with unfair competition, tax travel and property in transit to pay a return on capital never expended for the public welfare, and the effect will be that the industries of a people so afflicted will become paralyzed, their energy prostrated, their products valueless, and their usefulness as a portion of the body politic becomes impaired from such causes.

Gentlemen.—These remarks have been made in order to prove that the subject under consideration is fundamental in its character, that the prosperity of every community depends on the laws relating to it. That civilization is based on it because it pertains to the facilities necessary for the interchange of thought and property and finally that government itself rests on it, for without fixed laws relating to public highways, there would be no certainty of reaching the seat of government.

Having said this much on these general principals, permit me to call your attention to some of the changes that have taken place in the character of highways during the last fifty years as well as the laws by which they are governed.

Fifty years ago railroads were unknown to the world, to-day they are the almost universally accepted agency of commerce and travel among the people. More than three quarters of all the sums paid for moving persons and property in this country during the last year was paid for the use of railroads, therefore they must be regarded as our common highway.

Until within the last fifty years all laws relating to public highways were so framed as to promote public interests, and until within that time they were always under public control; the humblest citizen knew his rights when on them and no king or lord dared interfere with them.

It has been left for this intelligent age, and especially to the free and enlightened people of this country to permit laws to be passed allowing their public highways to pass under private control and become objects of private speculation.

Mr. Chairman, and Gentlemen.—I hold that nearly all laws passed within the last twenty-five years relating to railroads in this country have been wrong in character, unjust in their operation, against public

policy, in violation of the principal of public use and consequently many of them unconstitutional, null and void.

That all laws, which permit or allow the public to be taxed to pay a return on more capital than has been actually expended for the construction of railroads is in violation of public policy and therefore unconstitutional.

That all laws which permit the stock or bond holders of railroads to acquire an unreasonable or usurious return on the money actually expended for the public welfare is in violation of the definition of public use, and the decision to which I have referred, and therefore that all such laws are null and void and should be removed from the statute books.

That all laws which permit rail-road companies to own more real estate than is actually required to operate their roads is in violation of that provision of the Constitution, which provides against the entailment of property, and that all property so owned should revert to the people for their use and benefit.

Gentlemen, it seems to me that the report of this committee and the report of this legislature which follows it should relate principally to railroads, believing them to be the improved highways of the age and destined to supersede all others in their uses.

How far the power of Congress extends over them is a question for its own decision.

If it shall be found that, under the Constitution, Congress has the right to pass laws to regulate, or in any manner whatever interfere, with the subject of cheap transportation over public highways, then, in the name of common sense, let such laws be applied to the agencies in use by the people, and not to those they have abandoned, or are abandoning.

If laws are passed, they should be uniform in their character and based on the fundamental principles of public use.

Rates on passenger fare and tolls on freight transported over railroads should not be permitted to exceed the sums required to pay their necessary operating expenses, keep them in good and proper repair, and a fair return on the money actually expended for their construction and equipment.

By the enactments and enforcement of such laws, the burdens imposed on the necessities of life between producer and consumer would be reduced and the general prosperity of the people promoted.

The surplus earnings of railroads should be permitted to be expended on their moving, handling, and terminal facilities, until the demands of the public requiring their use is satisfied; and as all the legitimate claims of railroad companies have been met by the public when it has paid those to which I have referred, it is evident that no further charge should be made for the use of improvements paid for by the public, on a public highway, declared for public use and for its benefit; for it will not be argued that public interests are promoted when a tax is levied on the people for any such purpose.

To illustrate the extent to which railroads have been adopted by the people as their agency of commerce and travel, I submit the following figures taken from the official reports of the State engineer and surveyor, and comptroller of this State, for the year 1873:

From the comptroller's report for 1873.

Amount paid for tolls on the canals for the year 1872.....	\$3,060,328 89
Amount paid to boatmen for moving property over the canals do.....	6,000,000 00
Total tax on commerce moved over the canals do.....	9,060,328 89

From the State engineer and surveyor's report.

Amount paid for transporting passengers over the railroads of this State during the year 1872.....	\$24, 472, 869 12
Do. for freight.....	62, 384, 202 20
Do. for other uses, mostly for moving property.....	6, 211, 108 55
Total tax on commerce and travel for the use of the railroads of this State for 1872.....	93, 032, 179 87

From the auditor of canals' report for 1873.

Number of tons moved over all the canals of the State during the year 1872. 6, 673, 370

From the State engineer's report.

Number of tons moved over the railroads of this State during the year 1872. 27, 427, 415

Difference in favor of railroads..... 20, 754, 045

These figures it seems to me, should be conclusive with the committee as to which of the two systems is entitled to the greatest amount of public consideration.

In instituting this comparison I have no desire to throw any obstacle in the way of any aid that may be extended to the cause of cheap transportation over canals. While I am compelled to differ with many as to their future usefulness, I am not prepared, however, to say that if some improved system for moving property over them is adopted, they may not be continued useful adjuncts in moving the property of the country for many years to come. But of one thing I am sure, and that is, that ten years from now there will not be a canal-boat moved over the canals of this State by animal power.

Mr. NORWOOD. Pardon me; I did not get your idea on canals. Do you mean to say they will not be servicable unless they are run by steam?

Mr. JONES. What I desired to be understood as saying was, that unless some different mode is adopted, some mode by which property can be moved in larger quantities, more rapidly and at cheaper rates than by the one now in use, then, in my opinion, there will not be a canal-boat run in this State ten years from to-day, and for the following reasons:

First. That railroads are constantly increasing and improving their facilities for handling property.

Second. That property moved over canals is not raised on the water, but has to be brought to it by railroads.

Third. That railroads naturally connect with railroads, and that property, once placed on board of a railroad-car, naturally remains there until it reaches its destination, unless great inducements are offered for trans-shipment, and, finally, that no enterprise can afford to stand still in these days of rapid transmission of thought and property. Therefore I hold that the present system must be changed or canals will pass into disuse.

Mr. Thurber has read you some extracts from a pamphlet published by me about a year ago, relating to the cost of certain railroads reaching this city, and the burdens imposed to pay dividends on their fictitious or watered capital.

By reference to that pamphlet it will be found that the actual cost of the property, now represented by the New York Central and Hudson

River Railroad Company never reached twenty-five million dollars, and that, to pay 8 per cent. annual dividends on that amount, during the next eighteen years, would require that the sum of thirty-six million dollars should be added to the cost of transporting passengers and freight, over that road during that time, while to pay 8 per cent. annual dividends on its present capital during the same time will impose a burden, for like purposes, amounting to one hundred and forty-four million dollars, a blockade of one hundred and eight million dollars, against which the business of this city must compete with other cities on the sea-board, whose roads represent nearer their actual cost, estimating that a tax, amounting to 3 per cent. on property in transit, will divert it into other channels.

Against this burden the business of this city will have to compete, as against the business of all other cities on the sea-board whose roads represent their actual cost. Estimating that a tax amounting to 3 per cent. on transporting property will divert it into other channels, the business men of New York (unless this obstruction is removed) will lose the profits on handling many billions of property by reason of its being marketed through other cities.

The figures in relation to the cost of the road named were obtained from the secretary of state's office, the office of the state engineer and surveyor, and statements of its late president, Mr. Erastus Corning.

The CHAIRMAN. Are these of a character you would be willing to submit to the committee?

Mr. JONES. Certainly.

The CHAIRMAN. I mean the statements of the late president.

Mr. JONES. Most assuredly; their truth is a matter of record and public notoriety.

Some persons argue that competition is the only remedy to correct abuses growing out of railroad management, and against which so much complaint is now being made. In reply to that reasoning I will call your attention to the report of a committee appointed by the English parliament to investigate that subject. The conclusion to which that committee arrived at was, "that competition always ends in combination," and that it could not be relied on to protect public interests, which was best served by having uniform and reasonable rates charged at all times for the use of railways.

Besides, there can be no fair competition unless every railroad built has another built along its side, so that all the people living along its line can enjoy the equal advantages of competition.

Again, some people hold that the actual value of railroad property should be represented by its capital and commerce, and travel be taxed to pay a return on that amount. It might as well be said that the land occupied by Broadway is more valuable now than when it was the old Albany post-road; yet it is not that land was taken for a public use the same as land is permitted to be taken for the construction of a railroad, and it has remained free from the day it was opened for public use until the present time, and is as free to the beggar to-day as it is to Mr. Stewart, Mr. Vanderbilt, Mr. Cooper, or any other of the millionaires who use it. Let the opposite theory prevail and railroad companies could possess themselves of all the desirable property in the land and manipulate it for private speculation.

Much stress is also laid on the fact that rates have been reduced from time to time over certain roads, and for that reason the companies representing them are entitled to great public credit, and that if they had continued to charge the same prices they did years ago their income

would be much greater than they now are. In my judgment such reasoning is not well founded. I believe that the real cause of the growth of the cities along the line of the New York Central Hudson River road is due to the wisdom of the legislation which, twenty years ago, restricted the charges on passengers' fares to two cents per mile—that to that cause, more than any other, is due the dense population and the intelligence of the people living along its line. In conversation with a newspaper reporter the other day, Comodore Vanderbilt is quoted as complaining of this restriction. Should it be removed and prices advanced even one cent per mile, he would soon find the number of passengers diminishing, and the income from that source greatly reduced.

Railroads and their proper regulation has received more attention in Belgium than in any other country in the world. There a mixed system prevails, a portion of the roads being owned and controlled by the government, while a portion are owned by corporations, who manage them under governmental direction. In that country all kinds of tests have been made to find out how cheap railroads can be run, and so far no point has been reached where by reducing their rates their income has not been increased. Of course increased facilities are required, but as fast as facilities are provided there is business to keep them all employed.

Gentlemen, the hour is getting late, and I know you must be worn out with this long sitting; therefore I will not detain you any longer. In the pamphlet to which allusion has been made you will find much relating to this subject to which I have not the time now to allude. I shall be pleased to furnish each member of the committee with a copy, and if you should deem it of sufficient importance you will give the suggestions it contains such consideration as they are worth. Thanking you for your attention, I bid you good-day.

H. D. FAULKNER, Broadway, N. Y. Steam Cable Drawing Company.

I will occupy the attention of the committee but a very short time. I desire to make a few remarks in reference to the Erie Canal, and in that connection in reference to a new system of towage, which is now being introduced on to the canal, and which has been in progress for the last five years. I allude to the Belgian system. The principal involved in this system has been in operation on the river Sein, between Paris and Havre for the last fifteen or twenty years. There they use a cable, or rather not a cable, but a chain, and this chain is passed around a large drum-wheel, into which is inserted cocks about 8 inches in length, which fit the links of this chain, to prevent the chain from slipping on the drum, and as the drum turns around, it draws the boat along, exerting the power of the engine upon the chain at the head of the boat. The invention of what is known as the Fowler clip drum, which is a wheel about the size of the driving-wheel of a locomotive, has obviated the necessity of the use of the chain, and enabled the use of a wire cable instead. This clip drum, the outer edge is set with steel clips which are moveable entirely around the wheel. There is a groove inserted in these clips, and the wire rope is placed in that groove, and when the pressure comes upon it, it draws the clip together, and grapples and prevents it from slipping, so that it accomplishes the same purpose that the drum with the cocks does on the Sein, and enables the whole power of the engine to be exerted upon the rope.

There have been in the last forty years an innumerable number of attempts made on the Erie Canal in place of animal power, but every attempt at doing this has failed to work for the reason that their expense was greater than that of animal-power. And that trouble has arisen from this cause, that all wheels working in the water, whether it be a screw or a side wheel, using the receding water as a fulcrum to rest the lever or wing of the wheel over, the loss of power is found to be all the way from 60 to 75 per cent. in a narrow channel of water like a canal. The result is that so little of the power that is generated by the steam could be used in the pulling of the load, so to express it, that the expense has been found greater than that of animal-power. Hence every attempt that has been made has failed, and for that reason and that reason alone.

This principle is precisely the same principle as that used by the horse when he steps his foot firmly upon the tow-path and exerts his power upon the rope, every pound that the horse draws is felt upon the rope—there is no loss of power. We do the same thing with this steel cable. The way we manage the business is to submerge a cable the whole length of the canal, or, say, the length of a level. It is fastened at either end. We have a tug-boat to which is attached one of these clip-drums vertically on the side of the boat. The rope is picked up from the bottom of the canal, thrown over the wheel, the engine set in motion, the rope guided on the wheel by pulleys, the engine is then set in motion, and the tug moves along pulling upon the rope the same as you would do if you were going to swim across a pond of water, and instead of using your hands and feet you had a rope fastened on the other side and pull over by that. This principle, as I say, has been long in operation, and what is now going is two efforts, one to put it on to the Erie Canal and another to put it on to the river Rhine. There is a company in Cologne which has all their arrangements perfected, and the work is nearly complete to put it on the Rhine for three hundred miles. The plan there is to tow the boats up against the rapid current and let them come down with the propellers with the current. That same principle will probably be introduced upon the rivers of this country. The Austrian government has adopted it for the Danube, the Russian government for the river Volga. It has already driven off from the Seine for the last fifteen or twenty years all other methods of transportation. The whole business there for the last fifteen years has been done by this system. It has been examined by the best engineers of that country. It is approved by all the State officers of the State of New York, and we have recently, within the last three or four days, received an unqualified report from the engineer of the commission that was appointed to award the \$100,000 prize to the party who should discover or present the best system of navigating the canals by steam. We are not permitted under the law to receive that \$100,000, because at the time the law was passed, at the motion of Mr. Littlejohn on its final passage, this system was excluded from competing, the ground for that being that the principle was already established in Europe, and therefore it was not a new system.

But although we shall not be able to obtain the award for that reason, at the same time our system will prevent any one else getting it under this report.

We now have in operation thirty-one miles of this system upon the western levels of the Erie Canal, and we are towing boats there for hire, and have been for the last two or three months.

Arrangements are being made to extend it through the whole length

of the canal during the present winter, and at the opening of navigation next spring we hope to dismiss horses from the whole line, so that hereafter the towage on that channel will be done exclusively by this system.

The annual tonnage of the Erie Canal for the last several years has averaged about six millions of tons. The capacity with the present system of locks, according to the calculations made by the State Engineer, is nine million tons, which with double locks of the same size we have now extended through the whole length of the canal, the capacity would be eighteen million tons, or three times its present capacity.

It is claimed by this system that we can work the canal up to very nearly its full capacity. We can take boats through from Buffalo to Albany at an average of from four to five days. The average time used by horse power is from ten to eleven days, and has been for the last several years. It is expected, therefore, that this system will accomplish the object which is sought by those parties who are advocating an enlargement of the Erie Canal. On that subject I have a word to say. The great trouble in enlarging that canal is the supply of water. It is found now in dry portions of the season that the feeders are inadequate to its present supply, and if it was enlarged to make it a ship canal of the size suggested or proposed, the supply of water would be totally inadequate unless a very large additional amount of water could be obtained from other sources.

At the western end of the Erie Canal where the water is let in from Lake Erie, for a distance of three miles there is a very rapid current. It is nearly from five to seven miles to the hour. Heretofore it has been with great difficulty that boats could be towed up that rapid, and very large tugs of 30 and 40-horse power have been in request for that purpose. Where they tow it by animal power they have to double up their teams, put on from four to five horses, and then the utmost amount of freight that they can take up is 100 tons to the boat, so that all western boats going to the west from here only take 100 tons.

The effect of our system will be that we can take up from eight to ten boats at each tow, loaded to their utmost capacity, which we are now doing every day. Now that is a very serious improvement in the navigation of canals so far as western freights are concerned. It will enable merchants, instead of sending 100 tons upon their boats, to send 200 tons, or to load their boats to their utmost capacity going west and east also. We are towing down any number of boats that see fit to hitch on, and our engine is only 25-horse power. And we can take ten, fifteen, or twenty boats coming down the canal. We can take up from eight to ten with the utmost ease. That is being shown every day.

Mr. Green, the engineer of the commission to award the \$100,000 prize, has spent five days upon our boats, and has made an elaborate report, covering some eight pages, in which he goes into very minute particulars, showing the number of pounds of coal we burn, the amount of steam generated, the power and the expense, and every point upon that subject. The cost of towing canal-boats heretofore has been from 30 to 50 cents per mile by animal towage. It never goes below 30, and it often goes up to 50. It averages somewhere from 35 to 40 cents per mile for towing each boat, and that includes the light loaded boats going west, as well as the heavy laden boats coming east. We find that we can do that business for less than 30 cents a mile and make a good profit.

It was said that the estimate that was made of the cost of using each of these tugs a day would be \$44, but in practical use we find that the actual cost will not exceed \$25. Each tug takes a number of boats from

five to ten in either direction. We have two tugs in operation, and the plans are now in operation which, as I said before, will introduce the whole system upon the Erie canal between now and the opening of navigation in the spring. The plan will be to lay down to cables, one for the down boats and one for the up, so that they never come in collision with each other. All the boats going in either direction go on the same wire. That simplifies the business, and enables the work to be done with great ease and facility.

The CHAIRMAN. When you make up these flotillas, you construct them with how many boats abreast?

Mr. FAULKNER. Single file—hitched one right on after the other. In passing a lock we first lock the tug through and extend from that a long tow-line to attach to the boat as the tug passes out. It draws the tow of boats up to the lock, and when the lock is open we let the tug run on the wire rope and it draws the boat in. When the gates are opened, an extended tow-line from the first boat to the second goes through with the same process.

The CHAIRMAN. But there is a break in the continuity of the cable at every lock.

Mr. FAULKNER. Not necessarily. It can be laid through and fastened only at Albany and Buffalo. That is accomplished by cutting a little corner off from the gates, so that when they swing around the cable lies in that little space in the gates. In order to put it through the locks, that would have to be done while the water is out of the canal. In some of the locks we have already had it done. It is expected next winter to do it in all. When the gate swings around on the bottom of the canal it sweeps the rope with it and always leaves it in that condition. There is no fear of its getting under the gate. The rope is about one inch in diameter, and we have found by actual experiments in Europe that this rope will stand an average of 15,000 journeys, so that it will last, on an average, ten years, conducting the transportation on the Erie Canal. It lays right on the bottom of the canal.

Mr. NORWOOD. Do you not lose faster there by friction?

Mr. FAULKNER. There is no friction by it.

Mr. NORWOOD. By the mud or whatever there is there?

Mr. FAULKNER. There is no mud in the canal. There has been some little trouble with snags on the western division, but when they are taken out, as they will be, there will be no trouble.

Mr. DAVIS. How as to wash on the side of the canal?

Mr. FAULKNER. It has about as much effect as a flock of geese sailing on the canal. We can run from three to eight miles an hour. The average speed would be about three miles.

The CHAIRMAN. What is the average speed now running?

Mr. FAULKNER. About one to one and a half by horse power.

The CHAIRMAN. You expect to double it?

Mr. FAULKNER. Yes, sir. Mr. Caleb informs me they are now satisfied they can take the boats through in four days. We have never calculated on doing it any less than five; but if we can do it in five, that will double the capacity of the canal, and with the locks enlarged, will enable us to bring down 12,000,000 of tons instead of 6,000,000.

The CHAIRMAN. As I understand it, the basis of the calculating capacity of the canal is the capacity of one lock?

Mr. FAULKNER. Yes, sir.

The CHAIRMAN. Can you pass the lock any more rapidly than with a horse?

Mr. FAULKNER. Yes, sir; because we have more power. Horses, you

know, have to start the boat from a dead-lift, and it takes a minute more time for a horse, or two of them, to draw the boat into the lock and out of it.

I remarked that the State Engineer has made a calculation, upon which he estimates the present capacity of the canal, worked up to its full capacity, that is, taking one lock as the number of lockages that can be made at a single lock, and that determines the capacity as 9,000,000 of tons, but with double locks all the way through, he estimates that the capacity would be 18,000,000 of tons; so that if that were done, and we had double locks all the way through, and this system would accomplish what it purports to do, it would utterly obviate the necessity of any enlargement or spending any more money on the canals.

The CHAIRMAN. How much can you cheapen the transportation?

Mr. FAULKNER. We think that the toll could be reduced one-half, and give the State the same revenue they now receive.

The CHAIRMAN. How about the freighting?

Mr. FAULKNER. We think the cost of transportation by each boat will be reduced from 10 to 15 cents per mile. It is now from 30 to 50.

The CHAIRMAN. Would there not be this danger: Under the present system, anybody with a horse and a boat can run; under your system, the company that owns this improvement will have a monopoly?

Mr. FAULKNER. I suppose the State will regulate that; they own the canals and have that right.

Mr. CONKLING. I take it from your statement that this apparatus of yours cannot be deposited in the canal and worked and at the same time leave it free for the use of animal-power?

Mr. FAULKNER. Oh, certainly; it does not interfere with that at all. Anybody else can run, but if we can do the business with so much more rapidity and uniformity the bulk probably will fall into our hands. The tow-line could be dropped and let other boats run over; we do it every day now; we do not interfere with them. We have no control over outside people.

The CHAIRMAN. Is there a patent?

Mr. FAULKNER. The clip-drum is patented and some part of the apparatus, the grapple, &c.

The CHAIRMAN. Have you an exclusive right to use the cable on a canal?

Mr. FAULKNER. Yes, sir; the legislature has given us that right for fifty years.

The CHAIRMAN. You had better state the name of the association.

Mr. FAULKNER. It is the New York Steam-Cable Towing Company.

As Mr. Jones alluded to the subject of railroads in Belgium, I will state that I spent several months last year in Belgium, Holland, and England in investigation of this question of steam-cable towing, and also took some pains to look into the subject of their railroads. In Belgium and Holland they have a mixed system of railroads, the government owning about one-half and the private corporations the other half. The result is that a competition exists which makes railroad travel and transportation of freights cheaper than in any other country in the world. Belgium builds her railroads by borrowing money at $4\frac{1}{2}$ per cent. interest. She issues her own debentures, and they are at a premium in the market at $4\frac{1}{2}$ per cent. She puts her freight and passenger rates down to point that pays, but even at that point the government are making money out of the enterprise constantly. Now in

Belgium, also, you can send a dispatch of twenty words, exclusive of the address, anywhere in Belgium for 20 centimes.

Mr. CONKLING. How far is that?

Mr. FAULKNER. The telegraphs are some two or three hundred miles.

Mr. CONKLING. I spoke of telegraphic dispatches.

Mr. FAULKNER. In England the price of telegraphing is one shilling for twenty words, and when I left there the subject was under discussion of the adoption of the Belgium system as soon as possible, so that undoubtedly the charge in England will soon be sixpence instead of one shilling.

It is found, too, that the business of railroads in those countries where the government controls them and the telegraph is very largely increased since that system has been adopted. But on this question of river and canal navigation, the best engineers in Europe are holding conventions, and it is being introduced upon all the waters of Europe pretty much, and we believe that the same system can be introduced, after we get it on the Erie, on the Ohio and Mississippi rivers, with the same marked effect that it has on the Erie, and that the business of communication on those water-courses can be cheapened at least one-half below what it is at present. That question about the rivers is being demonstrated by the operations now going on on the Rhine and Danube. In Russia it is being introduced under the auspices of the Russian government.

I do know that I can enlarge on the subject. That gives you about the facts of the case as they stand. Much more might be said in reference to the statistics of the West and its growth, and the amount of grain to come forward; and there is one point worth considering. There are a great many millions of people in England the fence between whom and utter starvation is very slight indeed, who are more interested in this subject a great deal than our own people are, because the addition or subtraction of one penny per pound upon their meat, or one penny per bushel upon the grain they consume, is a matter of enormous importance to them, so that in considering this subject on the part of the Government of the United States, you take into account the interests of the whole world as it were.

We necessarily must become, as we are now, producers of the cotton and the grain that is to supply the surplus demand in Europe for all time to come. I see no country where that can be done as cheaply as it can be done here.

There is one other point I would be glad to make allusion to. That is the question of incorporations. In England they have a limited liability law. It has been in operation now for a long term of years, and they have established a bureau of incorporations which has the charge of all the corporations in the country, and these corporations all have to report to that bureau not only the statistics of their business, but also the issue of their stock, bonds, and everything that they do has to be reported to this bureau. A record is kept; it is open to the inspection of every citizen in the realm. I throw that out for your consideration. I believe that if we had a general corporation law passed by Congress, under which all future corporations should be organized, and under which all present corporations should have the privilege of re-organizing, drawn with particular care to the rights and interests of all parties, that it would obviate many of the complications and questions that now exist. It would have another effect, it would have the effect of making the corporations subservient to the will of the people, rather than to be

the masters of the people, because every corporation would be open to the inspection of all its acts of every citizen throughout the country, and the bureau would make its annual report to Congress as to all these corporations, and the subject would be constantly ventilated.

Another very important feature of that is the accident department. They always send a special agent or engineer to the scene of the disaster, and his business is to examine every feature connected with it and report, and if it results from a broken rail, or wheel, or any part of the machinery, that portion broken is taken possession of by the bureau and the proper test made by machinery of its strength, and regulations are adopted to prevent future accidents. I think that is a subject worthy of consideration, and which perhaps might be considered favorably in this question of a general incorporation law. With these remarks, gentlemen, and thanking you for your attention, I will retire.

HORACE H. DAY. Mr. Chairman: I want to say one word following up the same subject. I will take but one minute. The difficulty was referred to of the deficiency of water and the difficulty of increasing the commerce in the canal. We all know the cost of the feeders has been two or three times the cost of the main line of the canal. In investigating this whole subject of transit it has been one of the matters which has received my earnest attention, and I have in an invention submitted to the committee heretofore, and in one or two others, devised a method so as to make it unnecessary to discharge any quantity of water from one level to the other. Hence the difficulty of supplying water for a large business in the canal is already obviated in theory and could be demonstrated in practice.

There are two methods by which we can dispense with all passing of water from one level to the other. All the water then lost in the canal would be from evaporation. That system is very simple, and when the question comes up will be presented.

S. H. DUNAN, General Auditor of the Erie Railroad:

Mr. CHAIRMAN: I am somewhat disappointed by the non-arrival of Mr. Blanchard, our Second Vice-President, and of Mr. Clarke, our Third Vice-President, who have charge under our organization of the traffic and its movement, and are better able to give the committee information regarding the same than myself.

I was so clearly under the impression that Mr. Blanchard would be here this morning to meet you, that I have given the subject under consideration by you but little thought or preparation.

If the committee will allow me, however, to take for a text the letter from its chairman, under date of the 3rd instant, to Mr. Hinckley, I will answer their inquiries, so far as I am able, in the order in which they are therein stated.

In answer to the first, I would say that there are four fast freight-lines running upon the line of this road, as follows: The Great Western Dispatch, Erie and Pacific Dispatch, the South Shore Line, and the North Shore Line. These lines are practically all co-operative, that is to say, the cars used on them respectively are owned by the roads forming the lines, and the first two railroad companies pay a fixed commission for soliciting the business; the two latter they pay specific salaries for that purpose.

In some of the minor details these lines differ in their organization and management, but, so far as the relations they sustain to this company, they are substantially upon the same basis.

I present the committee with copies of the contracts under which these lines are operated.

The United States Express Company operate a line of express over the Erie Railway, furnishing the freight, loading and unloading the same; this company transporting it from point of loading to point of destination; the express company collecting the tolls and paying over to this company monthly 60 per cent. of the earnings.

This traffic is carried upon our passenger trains and our fast-freight trains.

I present the committee with a copy of the contract under which this is operated.

The Erie and Atlantic Sleeping-Car Company, operated by the Pullman Palace-Car Company, run a line of sleeping and drawing-room coaches over the Erie railway—they furnishing the cars and keeping the same in repair, except repairs and renewals made necessary by casualties happening through the fault and neglect of the Erie Company.

The Erie Company pay to the sleeping-car four cents per mile per car, and furnish fuel, oil, &c., for lubricating, lighting and warming them. I present the committee with a copy of the contract.

The relations which exist between the Erie Company and the freight propeller lines on the lakes are set forth in detail in the contract between the Erie Company and the Union Steamboat Company operating a line of eighteen propellers on the northern lakes. In connection with this company I present a copy of this contract to the committee.

Mr. Blanchard will, if the committee desire it, furnish the information called for in paragraph 3.

The facts called for in paragraph 4 are those of a general nature which the committee desire, and such as would apply to the railroads of the country in general.

So far as this company is concerned I am not aware that there has been any issue of fictitious stock.

It is admitted of course that at the time of issue the company did not receive the full face of some of the stock outstanding, but this of course forms no exception to the general rule regarding corporations.

I refer the committee for further information upon this subject to the report of the president, copies of which I have had the pleasure of placing in the hands of your secretary.

Mr. Blanchard will take pleasure in speaking to the inquiries in paragraphs 5, 6, 7, 8, 9, and 10.

With reference to paragraphs 11 and 12 the committee will find the information therein called for very accurately set forth in the published annual reports of the various railroad companies. In the report of the president of this company before you you will find that it has cost, upon the average of our whole business, about 92 cents per one hundred miles per ton of paying freight moved.

It is pretty generally admitted that freight can be more cheaply moved at a less rate per mile for long distances than for short, and at a less rate per ton for large amounts than for smaller ones.

All things being equal I should say it would cost more to work a road with steep grades than one with comparatively low grades. But to show the effect of grades upon expenses I refer the committee to the report of the Baltimore and Ohio Railroad, a road known to have the steepest grades, and more of them, than any of the other four trunk lines, by which they will find that that road is worked at a less ratio of expenses to earnings than any other of the trunk lines.

If you desire me to answer any particular statement relating to our financial business I shall be happy to do so.

Mr. NORWOOD. Will you favor the committee with your ideas as to what is meant there by fictitious stock.

Mr. DUNAN. I do not know what the committee meant.

Mr. NORWOOD. In other words what do you mean when you answer that you know of no fictitious stock?

Mr. DUNAN. Watering of stock—the use of stock without any consideration being given.

The CHAIRMAN. That was what was intended. It is intended to cover the same ideas with what is usually called watered stock.

Mr. DUNAN. There were one or two instances of the issues of stock on the Erie road, in the shape of dividends, but that was completely wiped out in value. That was in the early days, I think, of the New York and Erie road, where I find in looking back—I have not gone back into those matters as closely, probably, as I shall when I have been with the road a longer time.

Mr. NORWOOD. I wanted to ascertain whether you comprehended the term in the same sense the committee did. What is the capital stock of your road.

Mr. DUNAN. Eighty-six million three hundred and sixty-five thousand three hundred and sixteen dollars.

Mr. NORWOOD. What is the actual cost of the construction of the road?

Mr. DUNAN. That is a matter we are now working at, to find out what the actual amount of money put into the Erie road has been. I may be able to furnish you with the information before the meeting of Congress.

The CHAIRMAN. What is the length of your road?

Mr. DUNAN. I give table K, of the president's report, which gives the entire length of the road. The amount of road and line actually owned by the Erie road is five hundred and fifty-six miles.

Mr. DAVIS. Is your road a six-foot gauge?

Mr. DUNAN. Yes, sir.

Mr. DAVIS. Are your connections all six foot?

Mr. DUNAN. No, sir. We have but very few lines with which we can connect that are six feet. We make connections with the Great Western of Canada by lifting the car-body and changing the trucks.

Examination of Gen. WM. C. KIBBE, of the Continental Railway:

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: I represent a new railway enterprise, an enterprise which I think is destined in the near future to solve the problem which is now under consideration by your committee, that of "cheap transportation" between the west and the Atlantic sea-board. I refer to the "Continental Railway" now in process of construction, which will connect New York City by rail with Chicago and Council Bluffs, Iowa, designed as a double-track freight railway.

Without consuming the time of your committee any further by general remarks, I will briefly give you a history of this new and important enterprise, its prospects and capacity.

About three years ago a few capitalists and engineers, observing the rapidly growing commerce between the Mississippi Valley and the seaboard, or New York, and appreciating the following facts:

- 1st. That the center of production of the cereals and meats of the

West, as well the center of demand for the manufactures, merchandise, iron, salt, and coal of the sea-board country, was gradually receding westward, and that the area of country which could not be served in its transportation by the canals was extending in scope beyond the expectations of any.

2nd. That the railways, now answering the purposes of trunk lines between sections named, were originally built in fragmentary pieces, solely for local purposes, and with no prospect in view of ever subserving the interests of through commerce, and consequently, when united under one management for the purposes of through traffic, were necessarily circuitous, indirect, even as between local points, and having been cheaply constructed, had heavy grades, and were exceedingly expensive to operate. These main lines, the New York Central and the Pennsylvania Central, the former was organized from seventeen original corporations. That the companies controlling these corporations have expended millions of dollars in improving grades and construction, and will expend millions more, which will necessarily be charged to the cost of transporting the products of the country, between the points named, that the combined capacity of the existing roads and canals would soon be found to be entirely inadequate to answer the increasing demands of through commerce. These gentlemen, therefore, had a reconnaissance of the country made, upon the single idea of finding the shortest practicable route for railway construction, between New York Bay and the Missouri River, or Council Bluffs, the result showing that a very large saving, not only in distance, but also an equal saving in grades could be made; the engineer remarking at the same time "that the counties traversed were equal in resources to any other tier of counties in the States crossed; that the Anthracite Coal Basin was crossed at its most productive point; that the line would also pass through three hundred miles of bituminous coal fields, through the very centre of iron production, and near the celebrated oil fields of Pennsylvania and Ohio."

Charters were next procured from the six States of Iowa, Illinois, Indiana, Ohio, Pennsylvania and New Jersey. Companies organized, and all duly and legally consolidated into one line under one company, with full legal power to construct, maintain and operate a railway from New York Bay to Chicago and Council Bluffs, so determined by the best legal talent in the country.

The company has obtained the right of way for nearly nine hundred miles, has secured local aid to the amount of about \$4,000,000, have reconnoissances over the entire route and surveys extending several hundred miles on the line, which establish the fact that the loss in curvature over an air line will not exceed 8 per cent, or ninety-six miles from New York to Council Bluffs; and that the maximum grade going east (the way of the heavy traffic,) will not exceed 30 feet to the mile; and going west, 40 feet to the mile, making a saving in its alignment between New York harbor and Chicago and Council Bluffs, over existing railways, equal to from 14 to 20 per cent; while for the purposes of moving freight, an equal percentage in grades will be saved by this line. (The grades will be so uniform and light that a thirty-ton engine will haul fifty cars at the economical rate of speed, of say ten miles per hour, over any part of the line without interruption,) which settles this important question, that the "Continental Railway" will not only become the leading element in the railway system north of the Ohio River westward to the Rocky Mountains, aggregating thirty thousand miles, but occupying the shortest and best route, must become the axial line upon which the various roads (now numbering more than fifty,) crossing the

"Continental," will run their freight-cars containing the surplus products of the sections of the country which they permeate; and we believe it probable that we can move this immense freight at from 6 to 8 mills per ton per mile, charging a reasonable price for loading and unloading, without other discrimination to any or all of these roads, and do the same for our local traffic. We propose to operate this road at the most economical rate of speed for freight, say from eight to ten miles per hour. The company has secured territory for terminal purposes which, with the proposed facilities, will have ample capacity to handle all the freight which the road can haul, cheaply and expeditiously, and at the same time will provide that ships of any given draught of water can discharge and receive cargo direct from their warehouses and elevators. The company has let the contract for grading, bridging, and furnishing ties, from Tiffin, Ohio, to Chicago, upon which work has been done amounting to one hundred miles of double track. With ample means at hand, the road can be completed in three years, and in less time at an increased cost, should the emergency demand; and will have a capacity of moving 3,500 cars each way, every day in the year.

Having given you the history of the enterprise thus briefly, I will now introduce Mr. James E. Abbott, who will interest you in explaining the engineering phenomena of the line, which is, considering the physical geography of the country, truly remarkable

Examination of Mr. JAMES E. ABBOTT:

MR. CHAIRMAN, AND GENTLEMEN OF THE COMMITTEE: General Kibbe has explained to you briefly the history and organization of the Continental Railway as a corporation, encompassing its legal as well as its financial history up to the present time, and has called on me to explain to you the project, as its engineer.

If you look upon this map spread upon your table, which is Colton's map of the United States, you will see the line of the Continental Railway projected thereon, as closely as can be done, on a scale of twenty miles to the inch.

This line starts from the Hudson River, opposite the city of New York, and passes across the States of New Jersey, Pennsylvania, Ohio, Indiana, Illinois, and Iowa, to Council Bluffs, on the Missouri River; so direct as at no time to deviate as much as twenty miles from an actual geographical line, between its terminal points. You will also notice that at or about Rensselaer, Indiana, the company have projected and propose to build a connecting line with the city of Chicago.

It may be said that the location of the main line is defective, in not running direct to Chicago, but we think differently, for what, to us, appear good reasons.

The great advantage of a trunk-line is not to connect a great city with the Atlantic sea-board, but to connect the whole great Northwest with the sea-board, with as near a direct line as can be projected by engineering skill, and add connections with principal cities and towns by connecting lines; hence this company, in the location of its grand trunk, approaches so near Chicago, that it has deemed it necessary to project and build a line to that city.

You will further notice that *this* tracing of detail surveys of Pennsylvania and New Jersey, encompassing the most difficult points of the entire line, is projected on a scale of five miles to the inch, and hence shows the details of that part of the line very much better than the first map exhibited.

The committee will further observe, that while the entire line from

New York to Council Bluffs nowhere departs as much as twenty miles from a true geographical line, those departures are not abrupt nor at a sharp angle, but are sufficiently easy to not materially lengthen the line.

The Hudson River, New York Central, and Lake Shore Railroads to Chicago depart as much as one hundred and fifty miles from a direct air line, and the Pennsylvania Central with its connections, eastward to New York and westward from Pittsburgh to Chicago, departs more than one hundred miles from a true line from New York to Council Bluffs.

The Continental Railway saves in distance from New York to Chicago over the Pennsylvania Central Railway and its connections one hundred and twenty-eight miles, and it saves in distance over the New York Central Railway and its connections to Chicago one hundred and ninety-four miles. These are the only two lines that naturally come in comparison with the great Continental Railway.

The Pennsylvania Railroad and its connections from New York to Chicago, and thence to Council Bluffs, is one hundred and seventy-eight miles longer than the Continental Railway from New York to Council Bluffs.

The New York Central Railway and its connections from New York to Chicago, and thence to Council Bluffs, is two hundred and forty-four miles longer than the Continental Railway from New York to Council Bluffs.

The true geographical distance from New York to Chicago is about seven hundred and twenty-seven miles. The Continental Railway consumes in curvature about fifty-nine miles over that distance, making its total alignment, say, seven hundred and eighty-six miles.

The Pennsylvania Central Railway consumes about one hundred and eighty-seven miles in curvature, making its alignment about nine hundred and fourteen miles.

The New York Central and its connections from New York to Chicago consumes about two hundred and fifty-three miles by curvature, making its alignment about nine hundred and eighty miles from New York to Chicago.

Hence the truthfulness of the remark of General Kibbe, that this, the Continental Railway, saves from 14 to 20 per cent. of distance from New York to Chicago over existing lines of railroad.

So much for the question of geographical distance; but another element enters into the calculation of the cost of transportation of as much real importance, and that is the question of grades and curves.

The Continental Railway will have no grade going east of more than 30 feet to the mile, and going west, of more than 40 feet to the mile, and no curvature to exceed 4° . The reason, outside of physical conditions, for the grades being lightest from the West to the East is that the heavy tonnage traffic is from west to east.

It will be found by a careful equation of grades of the existing railways with the grades and curves of the Continental Railway that a percentage can be saved in cost of operation by the Continental over existing lines by its lighter grades and curves, practically as great as the percentage of distance before claimed.

Therefore the result would be that if the present railroads carry for 1.4 per cent. per ton per mile, from the West to the East, a distance of one thousand miles by *their lines*, the Continental Railway, with its easier grades and curves, and operated as a freight railway, could carry the same freight from the same points for about 8 mills per ton per mile, over its shortened distance, reference being had to the computations of

distances and grades before given. In proof of which reference is had to comparative grades and curvature, and their effect upon the cost of transportation by railways. (See Appendix.) You will observe by these maps and surveys that this company has made every effort to secure the shortest and easiest line between the East and West. To accomplish this result, they from necessity have to do some very heavy work. It may be added, that the railroads heretofore built and before referred to have been constructed without reference to making trunk-lines between the East and the West, or between the Atlantic States and the States of the Mississippi Valley; therefore, winding about as they do from place to place and town to town, they are well calculated to develop the local business of a large area of country, but unfit to be through great trunk-lines for the purpose of connecting with due economy remote parts of the same country. While the Continental, with its great saving of distance, the directness of its line, the ease of its grades and curves, makes a great national highway, that is capable with proper economy of operation to carry the products of the West to the East, and the manufactures of the East to the West, at a price that will satisfy the wants of commerce.

Another illustration is pertinent. The Continental crosses the Alleghany Mountains at an elevation of 1,440 feet above sea-level; the Erie Railway at an elevation of 1,760 feet above sea-level; the Philadelphia and Erie Road at an elevation of 2,006 feet above sea-level; the Pennsylvania Central Railroad at an elevation of 2,161 feet above sea-level; and the Baltimore and Ohio Railroad at an elevation of 2,620 feet above sea-level; showing conclusively the advantage gained by the Continental in its lower summit crossing of the Alleghany Mountains.

From the summit of the mountains, westward, advantages are gained as follows:

The Continental Railway passes the west line of the State of Pennsylvania at an elevation of 1,100 feet above sea-level; while the New York Central, the Erie, and the Philadelphia and Erie, descend from their respective summits to the level of Lake Erie about 600 feet above sea-level; and the Pennsylvania Central descends to the level of the Ohio River at Pittsburgh about 700 feet above sea-level; and the Baltimore and Ohio descends to the same river at Wheeling, say 630 feet above sea-level; thus showing that while the Continental crosses the mountains of Pennsylvania at a lower summit than any of the other roads named, when it has reached its greatest elevation, it loses less feet, by from 400 to near 2,000, in reaching the great table-lands of the Mississippi Valley, than either of the roads named.

The data above given, in the case of the Hudson River, New York Central, and Erie Railway, is taken from the State engineer's report of the State of New York; in the case of the Baltimore and Ohio, Pennsylvania Central, and Philadelphia and Erie Railroads, is taken from the various annual reports of those companies.

That part of the line of the Continental Railway west of Pennsylvania is remarkably direct in its alignment and easy in its grades, and in comparison with other roads encompassing the same territory, has great advantages to insure ease and economy in operation.

Mr. SHERMAN. You say this road is graded a hundred miles west of Tiffin. Have you made any arrangements to raise money for the eastern part of the road?

Mr. ABBOTT. I will allow General Kibbe to answer all questions as to the finances of the road. I confine myself to the engineering.

Mr. SHERMAN (to General Kibbe.) What progress have you made towards raising funds?

General KIBBE. We have along the road secured about \$4,000,000 in the shape of local aid, which is to be appropriated as the road is completed. Of right of way we have about nine hundred miles secured.

Mr. SHERMAN. How much have you expended on the road you have made, west of Tiffin?

Mr. ABBOTT. The entire expenditure on the road of every kind up to this time, including what had to be paid for the charters in the eastern States, (for we had to buy them,) is about \$4,000,000.

Mr. DAVIS. What is your estimate a mile, when completed, of the cost of your road?

Mr. ABBOTT. About \$43,000 per mile.

If the Continental Railway is built as projected and explained by these maps, it will compare with existing lines as follows—that is, in addition to the saving of geographical distance, as before explained, they will be able to save, by the equation of grades and curves, an amount of distance entering into the cost of maintaining and operating a railway that may be very fairly set forth as follows:

Mr. J. Edgar Thompson, chief engineer and president of the Pennsylvania Central Railway Company, gives this formula for the locomotives of equal power necessary to carry the same load up different grades. A given train of cars, with one locomotive, on a level road, up a—

Grade of 16 feet per mile, =1.87 locomotive.

Grade of 21 feet per mile, =2.15 locomotive.

Grade of 80 feet per mile, =6.13 locomotive.

Grade of 95 feet per mile, =7.28 locomotive.

(This calculation appears to be based on a train equaling in resistance 10 pounds per ton on a dead-level road, with a gravity of from 5 to 6 tenths per pound per ton for each foot of grade per mile.)

Mr. J. McMinn, civil engineer, gives in a published report the following as the result of experiments by a scientific and experienced railway superintendent, from actual tests, on different grades, curves, and tangents, on what is called *good railroads*:

The resistance of a train taken as 10 pounds per ton on a level, the gravity as .4242 pound per ton, for each foot of grade per mile; hence, a locomotive that would haul 60 cars of 16½ tons each on a level would haul—

On a grade of 40 feet per mile, 22.2 cars.

On a grade of 52 feet per mile, 18.7 cars.

On a grade of 65 feet per mile, 16.0 cars.

On a grade of 90 feet per mile, 12.7 cars.

On a grade of 95 feet per mile, 12.0 cars.

On a grade of 102 feet per mile, 11.3 cars.

The above illustrations show how largely grades and curves enter into the cost of operating a railway; also show remarkable harmony of views by different authorities, judged from a different stand-point.

To continue our illustrations. In the case of the Pennsylvania Central Railway from Harrisburgh to Pittsburgh, the *geographical* distance is less than one hundred and sixty miles. The distance by rail on that road is two hundred and forty-eight miles, and the distance by equation, for all the purposes of transportation, is said to be eight hundred and ten miles.

Mr. Farries, an engineer under the employ of the Pennsylvania Central Railway, in his fifth annual report to the Sunbury and Erie Rail-

road Company, presented an elaborate calculation to demonstrate an equation of distances, in which he publishes to the world the before-mentioned statement of the equated distance from Harrisburgh to Pittsburgh as equal to eight hundred and ten miles. These statements, presented by Mr. Farries, closely check with the formulas given as before by Mr. J. Edgar Thompson, &c.

We might add, the New York and Erie Road consumes, in ascending and descending grades from the Hudson River to Salamanca, 6,448 feet, which, when equated, gives the equivalent of 322.4 miles of additional distance from grades alone, and eighty-seven and three-quarters miles from curves, at the rate of 68° of curvature per mile of road, showing this as a gross result of equated distances by that road.

GEOGRAPHICAL DISTANCE.

From New York to Salamanca.....	260	miles.
Railroad distance by Erie Railway.....	413	miles.
Equated distance by Erie Railway.....	823.15	miles.

Or,

The geographical lines, as before.....	260	miles.
Consumed by curvature.....	153	miles.
Consumed by grades and curves.....	410.15	miles.

Total..... 823.15 miles.

In other words, while the true or geographical distance between New York and Salamanca is only two hundred and sixty miles, the equated distance is 823.15 miles, showing that every ton of freight has to pay for a transportation over 563.15 miles more than the geographical distance, or three miles for one.

To continue our investigation. The ascending and descending grades of the New York Central Railway from Albany to Buffalo is 2,781.6 feet. This equated, at 20 feet to the mile, would give 139.08 miles consumed by grades alone.

Now, the geographical distance from Albany to Buffalo is about.....	260	miles.
From Albany to Buffalo, by New York Central Railway..	297	miles.

Loss by curvature.....	37	miles.
Hence, the showing would be, geographical distance, Albany to Buffalo.....	260	miles.
Railroad distance.....	297	miles.
Equated distance.....	436.08	miles.

Or, still in other words,

Geographical distance, Albany to Buffalo.....	260.00	miles.
Railroad distance, Albany to Buffalo.....	297.00	miles.

Loss by lateral curvature..... 37.00 miles.

As before, loss by lateral curvature.....	37.00	miles.
Loss by grades, or vertical curvature.....	139.08	miles.
Geographical distance.....	260.00	miles.

Total in equated distance..... 436.08 miles.

(This does not give the loss by curves on the basis of 320° of curvature per mile of level road.)

The continuation of this investigation would show that the Hudson River Railroad, from New York to Albany, is in length		143. 00 miles.
Geographical distance		131. 00 miles.

Loss by curvature.....	12. 00 miles.
To which add equated loss by grades, without curvatures.....	19. 65 miles.

Total loss on true distance	31. 65 miles.
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The Pennsylvania Central, at Pittsburgh, being in geographical distance about thirty miles east of the west line of the State of Pennsylvania, and by rail fifty from the State line.

The Erie road to Salamanca is about ninety geographical miles east of the west line of Pennsylvania, and by rail one hundred and thirty-four miles and the New York Central to Buffalo about eighty-five geographical miles east of the west line of Pennsylvania, and by rail one hundred and fourteen miles.

The Pennsylvania Central, by rail from New York to west line of Pennsylvania.....	494. 00 miles.
The Erie and Atlantic and Great Western, by rail from New York to west line of Pennsylvania	547. 00 miles.
Hudson River, New York Central, and Lake Shore, by rail from New York to west line of Pennsylvania.....	554. 00 miles.
The geographical distance from New York to west line of Pennsylvania, on the location of the Continental Railway, is.....	330. 00 miles.
The rail distance will be about.....	367. 00 miles.

Loss by curvature in Pennsylvania and New Jersey, say ..	37. 00 miles.
Add loss from equation of grades and curves.....	208. 64 miles.

Total loss.....	245. 64 miles.
To which add geographical distance.....	330. 00 miles.

Total equated distance from New York to west line of Pennsylvania by Continental Railway.....	575. 64 miles.
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This comparison of lines is from New York City to west line of Pennsylvania.

You will observe that in the case of the Continental the equated distance is given for the entire distance between New York City and the west line of the State of Pennsylvania.

That in the case of the Pennsylvania Central Road the equated distance is given only from Harrisburgh to Pittsburgh, with the distance by rail on other parts of the line added, not being able to secure the information to equate the other parts of that line between the city of New York and the west line of Pennsylvania.

That in the case of the Erie Railway the equated distance is given from New York to Salamanca, and the distance by rail added from there to the west line of Pennsylvania, not being able to get the data for further equations.

That in the case of the New York Central the equated distance is given only from New York to Buffalo, with the distance by rail added from Buffalo to the west line of Pennsylvania, not being able to secure the data to equate the balance of the line.

To recapitulate these figures, we would have—

Geographical distance from New York City to west line of Pennsylvania.....	350.00 miles.
Rail distance by Pennsylvania Central Road.....	494.00 miles.
Equated distance, as before, Central Road.....	1,056.00 miles.
Rail distance, Erie and Atlantic and Great Western Road.....	547.00 miles.
Equated distance as before.....	957.15 miles.
Rail distance, Hudson River, New York Central and Lake Shore.....	554.00 miles.
Equated distance.....	712.07 miles.
Rail distance, Continental.....	367.00 miles.
Equated distance.....	575.64 miles.

Notwithstanding the great saving as shown above, we confidently believe that there can be even more favorable results gained than here shown, and which results go to show more than anything else what is needed to solve the question of transportation between the East and the West.

EDWIN D. WORCESTER, secretary of the New York Central and Hudson River Railroad Company, and acting treasurer of the Lake Shore and Michigan Southern Railway Company.

MR. CHAIRMAN: I appear here representing the New York Central and Hudson River Road, and the Lake Shore and Michigan Southern—the former more particularly, however. The general subject referred to this committee is one about which there has been a great deal said. It is one that is properly considered very important. When considered in all its surroundings it is much larger than anybody not thoroughly familiar with it would, perhaps, suppose. It is one that we might talk upon for weeks, perhaps, and then be almost as far from discussing all there is of it as when we commenced.

When I saw the reference to this committee, I divided the subject up in my own mind into what I supposed would be the two general heads for their consideration, one being that of facility or the increase of facility for transportation, the other the rates of transportation. Under facility, I included the opening of new routes, or the development or assistance of those already existing, and everything of that kind. Subsequently a letter from the chairman of the committee made some subdivisions of the general heads, and so what I say, if it will be satisfactory to the committee, shall be something on each of these subdivisions, principally in the way of giving what may be called information derived from my especial connection with the lines I represent, or from railroad familiarity generally. Then, perhaps, I shall ask permission to make some remarks with regard to the misapprehension that there is in the public mind concerning railroads and their management.

THE CHAIRMAN. I will say that the letter was prepared somewhat hastily, and I hope you will not confine yourself specially to it.

MR. WORCESTER. There always has been and is a great deal of misapprehension on this subject. It is hardly necessary to allude to the remarks so frequently made about extortion and excessive rates, mixed in with at least a moderate use of very peculiar expressions, (some of which, perhaps, could hardly have been intended to convey the strict meaning of the words actually used,) such as monopolies, oppression, and even worse.

It is worthy of observation that in all the discussions upon this subject no railroad company has, either officially or through any individual

connected with it, appeared once in print. All that has been said about it has been *ex parte* entirely, and has been simply assertion, most of it wanting the essential element of intelligent information. In the course of my connection with the New York Central Road, one that has had a somewhat varied experience, I call to mind a great many cases in which a thing was first supposed to be so and so, next asserted to be so, and finally it grew to be a sort of conviction in the minds of even unprejudiced men, or those who intended to be so, that the thing was actually so. But I never saw a case of the kind referred to in which, when the facts were investigated and accurately ascertained, people were not very much surprised at their misapprehensions.

So far as I know, there is no desire on the part of any railroad company, and I certainly have none, to suppress a single fact, that is, provided it can be made use of for its strictly legitimate effect; but to make statements that do not cover all the surroundings and include all the circumstances, and that can be put into some other shape, is not, as experience has shown, a safe thing to do; and it is for that reason that there has been so little said with reference to a great many of the things that are so frequently asserted of railroads, things absolutely wrong as regards the actual facts.

About more or increased facilities: I do not think that the railroads have any disposition, not the slightest, to oppose or do anything at all to prevent the fullest development of transportation facilities between the so-called East and West, or elsewhere. With regard to anything that is referred to this committee, there is no desire to question any conclusion the committee may come to from the facts they may ascertain, or to influence any recommendations they may decide to make after the whole subject has been fully considered. They only desire to give the information that should enable the committee to come to proper decisions, and to explain some of the things on which there is gross popular misinformation. The last is outside, perhaps, of the subject-matter actually before the committee, but the occasion is undoubtedly a proper one.

The first subdivision that the committee has made is the business relations sustained to railroad companies by co-operative freight lines, non-co-operative, and by the dispatch, express, and sleeping-car and drawing-room car lines. While I have some considerable knowledge of these organizations on other roads, I shall speak more particularly with regard to their arrangements on the roads with which I am directly connected. Mr. Hayes, who appeared here yesterday, represents the "Blue Line," which is one of these lines running from New York and Boston over the New York Central and Hudson River, and going via Suspension Bridge over the Great Western and Michigan Central to Chicago, and thence diverging to various points farther west. There is another line called the "Red Line," that runs from New York and Boston, and by way of Buffalo, over the Lake Shore and Michigan Southern Road to Chicago, and also down the Toledo and Wabash Road and branches, and to various points in what might be called the central part of the Southwest, the "Blue Line" just mentioned going into rather what might be called the Northwest. There is a third line, called the "White Line," going from New York and Boston by way of Buffalo and the Lake Shore and Michigan Southern Road, turning off substantially at Cleveland, and going down to Cincinnati, and along the line of the Ohio River into what may be called the real Southwest and South. Each of these lines has extensive divergencies at all important points. Territory is divided

up between them, so that all the so-called "West" is practically covered by their operations. In stating the organization of one, which Mr. Hayes has done with regard to the "Blue Line," the organization of all has been stated.

I noticed the New York Times this morning had a brief article with reference to Mr. Hayes' remarks yesterday, in which it said that there was some doubt still in the public mind whether there were not abuses—that was the word used—connected with these lines; whether they were not wheels within wheels, something like the "Credit Mobilier." For the purpose of definitely disposing of these doubts in a manner that should answer once for all, I desire to say that what Mr. Hayes stated yesterday about the "Blue Line" is true in the strictest degree, and that it is equally true of each of the other lines that I have mentioned. There is not a thing in any way connected with them that is different from the usual manner of doing freight business, excepting simply the organization for efficiency. I made some statements before this committee when it had the postal-car matter before it concerning the effect and purpose of these lines, to which I beg to refer.

There is another line which I will mention now, so as to put them all together; it is called the Merchants' Dispatch Transportation Company; and there is still another one, lately organized, called the International. The Merchants' Dispatch Transportation Company covers the same territory as the "Red," "White," and "Blue" lines, and runs to substantially the same points as they do. It is accessory as regards territory. The "International Line" is run in connection with the Grand Trunk and Michigan Central. So far as it goes west of the connecting point between the Grand Trunk and Michigan Central, it covers partly the same territory that the "Blue Line" does. These lines do their business between the roads precisely the same as if the separate roads did it, by interchanging their respective common cars. There is nothing whatever paid in any shape at all to the lines; there are no special agents for them. The business is all got and managed entirely by the ordinary agents of the respective roads. In the "Red Line," which was the first one organized, for the purpose of making a kind of tangibility to it, there was issued what was called a certificate of stock, representing a so-called share for each car put in the line. This was merely to fix a basis of representation in the management, but even that was subsequently dispensed with. The cars that are put in are and remain the separate property of each road; the number is increased by agreement of all the parties, as occasion demands, and the whole thing is simply a practical consolidation of action for the purposes of the business the line is to do. The cars are set apart expressly for the service they are to be used in. There is a general office maintained by each line, managed by Mr. Hayes, of Detroit, for the "Blue Line," and by Mr. Smith, of Buffalo, and Mr. Darling, of Buffalo, for the "Red" and "White," for the purpose of adjusting the accounts between the companies with regard to the use of the cars. Cars are put in upon the basis of the length of the road—one car to every so many miles; but if the business, by and by, gets sufficiently large, it may be so many cars per mile. Mileage is adjusted between the companies just as it would be in the case of interchange of ordinary cars.

MR. CONKLING. Do you confirm, as to all these lines, the statement made by Mr. Hayes that the stockholders and directors of the railroad are not stockholders in any of these companies, or in anywise in conflict as to interest between their representation of one trust and another?

Mr. WORCESTER. Entirely so. There is no stock in any of them to be interested in; nothing of the kind.

Mr. DAVIS. Just there, tell us why the lines are separate from the railroads? What is the object of their existence separate?

Mr. WORCESTER. I stated the object of these lines to the committee when it was considering the postal-service question. In addition to what I now say, I beg to refer to what I then said, and I will further explain. We have on the Central what is called the "Grain-Line Transit Company," running from Buffalo, and have special cars appropriated to it and marked with its name. These are *entirely local*, and all the business is our own. The arrangement is called a line only to give it a certain definiteness when spoken of, and as a simple matter of convenience and efficiency for that particular traffic.

What is true of this line as a purely *local* arrangement is true also of the lines I have been speaking of for the *through* traffic. To show how exactly the details of the business I done in the usual way, if a man contracts with either the "Red," "Blue," or "White" line, say in New York, he contracts with the New York Central and Hudson River Company just as if he went into our especial office, and so at each point where any one of the companies in the line have an office. There is an office of central control for the cars run in each of these lines. That office represents all the parties in interest. No company can divert the cars it has appropriated to this through service from either of the lines for the purpose of local or independent use. The general manager has control of the cars. He can require the New York Central to send the line-cars it may have on its road to any point where the business for the line is to be obtained; the object of the organization being to promote efficiency.

Mr. DAVIS. Are the earnings of the line divided *pro rata*?

Mr. WORCESTER. There are no earnings of the line. A record is kept at the central office, showing what is called the line earnings; that is what is earned by all the cars in the line, by all the companies that own such cars, but for the earnings of the line as a line, separate from other earnings of the respective companies, there is no such thing. The line earnings are merely those of the companies which form it. Business is billed over each road just as in all other cases. For instance, a "Red Line" car comes over the Lake Shore and Michigan Southern Road to Buffalo, and in the same train comes an ordinary car of the Lake Shore and Michigan Southern Road. They deliver the two cars to us. In the case of the "Red Line" car we put it into our train and haul it away, and in the case of the other car we perhaps transfer the property, because their car could come no further. The charges, if any, accumulated at, say Chicago, called "back charges" would be paid by the Lake Shore Company, on these two cars, in just the same manner. The cars would be billed over the New York Central in just the same manner. We would collect the money on each in just the same manner. We would pay the Lake Shore their proportion in just the same manner. All the details attending the line-car would be settled just as those of the ordinary car would be. Besides the manner of keeping statistical information, and the general control of cars for efficiency, the line business differs from ordinary only in this important particular—important for the public, and almost entirely for their benefit—the saving of the cost of transfer, which would be necessary if each company ran its cars only to the end of its own road. This arrangement, it must be remembered, is a voluntary one on the part of the railroad companies. A great deal has been said about doing certain things by means of legislation, and that

certain things are done because of active competition, the development of business, the natural exercise of business shrewdness, and the obtaining of business customs. This line business has grown out of these last. I speak of this because it may be a matter of great doubt whether things of this kind can be regulated by *both* legislation and by business custom or business necessity. Both principles could hardly obtain in the same case.

Mr. CONKLING. These companies are not incorporated, but they are voluntary partnerships?

Mr. WORCESTER. They are not incorporated. No legislative action has been sought, and the objects effected could not probably have been brought about by mandatory legislation. They are voluntary associations for a particular purpose.

Mr. DAVIS. The manner in which they are organized, then, is of A, B, C intending to create a line. They then make arrangements with the companies for that purpose. Is that it? How are these lines brought into existence?

Mr. WORCESTER. I will tell you how the "Red Line" was, and it was substantially the same with the others. Formerly cars were run through sometimes, but occasionally only. Suppose a car started from Chicago, say a Michigan Southern car, it would be run to Buffalo, where freight destined for New York would be transferred at a very considerable expense—about the largest expense there was connected with transportation in those days—and a great delay was caused also. If the Michigan Southern let its car come to New York, and the New York Central Road did not pay for the use of the car *in kind*, that is, by letting one of its own cars go to, say Chicago, the Michigan Southern Railroad would very soon be depleted of its cars, which would be accumulating on the New York Central Road, even although that company should pay for the use of the cars in cash. This line arrangement was one by which this difficulty could be remedied, so that freight could be shipped from one extreme point to another without changing cars, while at the same time each company could depend on having its cars back.

Mr. DAVIS. That does not quite cover my question. Suppose a new line, you say there are new lines started recently, wanted to come into existence to-morrow, what would be the process?

Mr. WORCESTER. I cannot understand that condition.*

Mr. DAVIS. You say there have been two or three new ones?

Mr. WORCESTER. The "International Line;" that was by way of the Grand Trunk Road, a route that had not one of these lines running, and they made one for it.

Mr. DAVIS. Who made it?

Mr. WORCESTER. This line was made, as I explained about the others, because the companies found that they wanted to interchange cars when they made connections of their roads, and they set cars especially apart therefor.

Mr. SHERMAN. Perhaps Senator Davis is confusing the class of companies.

Mr. WORCESTER. The same cause which led to the organization of the "Red Line," that is, the necessity growing out of connecting roads for through traffic, at Buffalo, led to the "Blue Line," for a connection at Suspension Bridge. The "International Line" goes over the International bridge, just done. If other new roads should connect with us at Buffalo or Suspension Bridge, and business was large enough to demand it, it is quite likely lines of the same kind would be found to run over them. What the organization of lines on other roads is, I could

speak of, if at all, only from general knowledge. The kind of arrangement I have described is what we have for all the lines on the New York Central and Hudson River. Possibly Senator Davis had in mind just now the formation of non-co-operative or independent lines which are let in on some roads, I think, on certain fixed terms. We have no such lines, however, on our road.

I want to mention another important fact about these lines, that, up to the time the arrangements were made by which a definite number of cars was set apart for these lines, and this through business was transacted by them in a systematic manner, that business was as uncertain as it well could be. The New York Central never, until then, entered into any definite arrangement for pro-rating on freight. The principle of pro-rating, that is, accepting part of a rate in proportion to length of road under a contract for rates made by somebody else instead of by itself, permitting others to make contracts, and recognizing such contracts, was not adopted by the New York Central until these lines were put in operation. Before that time we reserved the right, under all circumstances, to charge on property that came to us at Buffalo an independent rate; that is, one irrespective of any price other parties had contracted for, and there were many cases then in which property would be contracted from Chicago, and when it reached Buffalo circumstances were such that we would ask more than our pro-rata of the through rate, and the contracting parties would have to lose the difference, all which led to a great deal of disturbance, kept everything fluctuating, and made no efficient connection whatever.

There are some features attending the transshipment or transfer of property under the old-fashioned way of doing business. I was in the mercantile business a good many years ago, before railroads came into use for freight purposes. One of my duties was to mark goods to be shipped, and I well remember marking to the care of three or four people. For instance, going by canal, care of such a man at Buffalo; care of some one else at some point up the lake; some one else at some interior point, and so on. In the then ordinary way of doing business, a man shipped his property to a certain point, say the terminal of some route, and when it got there it was subject to his order. If he was not there himself, he had an agent or consignee to take it. The business of that agent or consignee would be to pay the charges if not prepaid when the property was shipped, deliver it to the next party in the line of transportation after making his bargain with such party, and so on, for every point of reshipment. The same rule would, abstractly considered, apply to-day, but all this detail is done voluntarily by the railroad companies for the convenience of shippers and the public. Property shipped from Chicago, Saint Louis, and even San Francisco, comes to New York without any special oversight or charge. If from Canada we even enter it at the custom-house, and give a bond for duties. This is all voluntary. Few people have any conception of the vast amount of troublesome business done by railroad companies for them in this way, and yet the saving of the expense of transfer or reshipment instead of being made the source of additional profit has been applied to the reduction of rates. I undertake to say that the railroads could to-day make as much money without these lines, the rates being higher, of course, and the volume of business much less. It has, however, become now almost a matter of necessity to continue this way of doing business. It has been done long enough for many to claim they have a right to demand it. If a man should go into a railroad office and ask for a passage-ticket and also for a check for his baggage from New York to New

Orleans even, he would be surprised to be told it was not his *right* to demand them. And yet the arrangements voluntarily made for these things involve the assumption of large responsibilities for others without consideration therefor. But it is said competition and considerations of a business nature lead to this assumption, and this is no doubt true, but where these considerations obtain they alone must regulate.

Mr. SHERMAN. Have you arrived at the point where you could give us the proportion of freight carried by those lines compared with the general freightage?

Mr. WORCESTER. I can answer that in a general way by saying that substantially all the *through* business is done by these lines. The intention is to keep enough cars in these lines to do all the through business. I have a statement as to the number of cars in each line, which I will read: In the "Blue Line" there were 3,287 cars, of which 800 were New York Central. In the "White Line" there were 3,247 cars, of which the New York Central had 846. In the "Red Line" there were 3,489 cars, of which the New York Central had 1,281. "The Merchants' Dispatch," I have not got the number of accurately, just now. I think there are about 1,500, however. In the "International Line" there are about 1,000 cars, of which the New York Central has about 225.

With the Lake Shore Road I am not quite so familiar as to the number of cars. They run a line in connection with the Erie Road, called the "Great Western Dispatch;" another line, in connection with the Pennsylvania Road, which is the line Mr. Potts spoke of yesterday, called the "Empire." They have also a line running to Baltimore, called the "Globe Line." I am not familiar enough with them to state precisely what their arrangements are, but all those lines, as I understand it, are very approximately like those on the Central. Some of them, such as the "Empire," are represented by stock, but what the effect of that stock is, those who are interested can say best.

The second subdivision made by the committee is the relation existing between railroad companies and freight-propeller lines on the lakes. This connection of what is called rail and water lines is a thing the New York Central has, at present, very little. We take what business comes to us at Buffalo, which is the only point where much comes to us by water, and transport it the same as we would any other business. We have no special connection with propellers on the lakes. We once owned an interest in a line of passenger steamboats on the north shore, and also in a line on the south shore of Lake Erie. We at one time owned, ourselves, ten propellers on the lakes, which were run in lines, parts of the ten being run in each, giving us a large and, sometimes, controlling interest in those lines, by which we did a very large lake business directly and under our control. That we have since gone entirely out of. The establishment of these lines of through cars was one reason for disposing of our water interests. Rail lines naturally became connected more and more with other rail lines by reason of these through lines of cars; nevertheless water communication, where it strikes rail, is generally treated as a rail connection would be at that point. That is the general proposition. It gets the same rate substantially as the railroad would get at the same connection.

The CHAIRMAN. I do not think I understand you there?

Mr. WORCESTER. At the point where water communication strikes the rail, the rate would be substantially the same by rail forward from that point, as it would be for any similar property that came to the same point by rail.

Mr. HAYES. That is so.

Mr. WORCESTER. The practical competition between water communication and rail is pretty well over. Each has settled itself to the point where its own natural and proper business is understood.

Mr. SHERMAN. Before you go on I should like to have this point made a little clearer: You say you charge the shippers by water and rail from Chicago to New York the same rate per ton per mile or bushel from Buffalo here, that you would if it was brought over by the Lake Shore Road?

Mr. WORCESTER. Yes, sir; our rate from Buffalo would be substantially the same; our proportion from Buffalo to New York would be substantially the same whether delivered at Buffalo by lake or by rail. There are some items connected with the water-business, such as the expense incidental to transferring from vessels to cars, but, substantially, the rule is as I have stated.

Mr. SHERMAN. I have here the price for different months for 1872 from Chicago to New York, and if it was delivered to you at Buffalo midway, by vessel, would you make an abatement in proportion to the distance from Buffalo by rail to Chicago?

Mr. WORCESTER. Yes, sir; if I understand accurately what you mean. What I stated in regard to this business is, however, supposing things to be in what is called a normal condition—that is, all things being equal; that is the principle. There are times when, owing to peculiar circumstances, matters will, for a longer or a shorter time, get quite reversed. Most of the peculiar allegations made about railroad-rates are true only when this last condition obtains. As a rule all charges made of so-called unfair discriminating rates have been caused by an abnormal condition of things.

Mr. NORWOOD. What produces that? Is it the action of the railroad, or is it usually forced upon them; or, what I mean to ask, is it a condition of things within the control of the railroad?

Mr. WORCESTER. Sometimes it is and sometimes it is not. It is difficult always to say; it is oftentimes quite unexplainable. If you should earnestly try to find out who was to blame for a certain condition of things, it might be practically impossible to succeed. A person may, in a certain case, say the railroads are to blame, but that would be general and cover the whole system party to the matter; and, if the question be asked, which is the individual road, it would be quite impossible to name it, and so the blame does not practically locate at all. Cattle were at one time taken from Buffalo to New York for \$1 per car by the Erie and also by the New York Central Road. There was no pretense that there was any profit in doing business at that rate, and the rates along the line of the roads were not, of course, reduced down to the proportion of a dollar. They could not very well be. This was an abnormal condition of things, but, very naturally, it did not exist very long. The only question to settle was, who could stand it the longer?

Mr. NORWOOD. That was a railroad fight?

Mr. WORCESTER. It was emphatically so. But, if you wanted to find out who was to blame for it, it would be very difficult. The primary causes are frequently small and remote. An agent somewhere makes a contract. The agent of another railroad (intentionally or unintentionally, as the case may be) misstates the facts to his principals, who say, "that will take business away from us, and we will meet that by reducing our rates;" and they proceed to do it to such extent as will protect them, as they suppose, in retaining their business. And yet the foundation for the action may have been a misstatement. Time is not always afforded to inquire into the facts. Action has often necessarily

to precede inquiry. For obvious reasons no railroad can permit a "cut" in rates to divert its traffic to another line unless it means to give up the traffic altogether.

Mr. NORWOOD. Can you give an instance of how rates go up?

Mr. WORCESTER. It is sometimes supposed that the rates are made with reference to the revenue to be paid in on the capital, or on the investment in the enterprise, or on "watered stock," as the present term is; and that if a railroad can make "terminal charges," or "transfer charges," or can *invent* anything of that kind, that *that* is made an *excuse* for higher rates. Nothing of the kind ever obtains. Rates never have the slightest reference to what the capital of the company is, or how large an investment they may desire to pay on. The only question is what the property will bear, keeping always in view the future development of business and the elements of public prosperity involved in such development. What can be got upon this basis has to work out its own results as regards all or any returns to stock or capital.

With regard to terminal charges to which I just alluded, terminal charges by a railroad do not affect a rate in the slightest degree. A shipper would not have property carried less because railroad terminal charges, if there were any, should be taken off. Such a charge by a railroad is only a question of the distribution between the particular parties in interest of the whole amount received. One road says to another, you are an intermediate road and have no work to perform for the through traffic, except to hitch on to the cars and haul them over your line, while we, being a terminal road, have to furnish depot and freight-grounds, warehouses, and facilities, and do switching, handling, and delivering, collecting bills, &c., and for this we must have a greater part of the rate than would be ours upon the simple length of our line. This was a matter of frequent adjustment between the New York Central Road and the Hudson River Road previous to their consolidation, and has been especially considered in settling the business done by the through lines. It was, however, nothing additional charged on the property; it was and is only a question as to whether the expenses of the terminus should be contributed to by all the companies in the line instead of being borne by the terminal one. It is simply a variation from strict pro-rating on length. It never was made an *excuse* for additional charges on property. Such a thing as an excuse would not be necessary if the property would bear it, keeping in view the considerations I have already mentioned. What really settles rates is the condition of commerce in the country, in view of all the circumstances surrounding it, and they are governed by the same inflexible laws that any other matter connected with commerce is, and railroad managers are wise enough to know that even if they desired so to do, these laws cannot be violated with ultimate benefit.

The third subdivision relates to differential and discriminating freight-charges of all kinds, imposed by railroad companies, and especially with reference to the minimum price upon which such charges are based.

By differential or discriminating charges, I suppose is meant cases in which, under apparently similar circumstances, treatment is dissimilar.

The CHAIRMAN. That is what was intended by discriminating. By differential is meant the difference in charges on freight and the reason for it; but the other term was meant to cover what you said.

Mr. WORCESTER. Discrimination is rather a peculiar word. It has a certain concrete meaning, and carries with it at least some idea of special intention. Usually as connected with freight business, those

who use it mean charges fixed in a certain way for a certain purpose, and such purpose, it is assumed, is improper. It might almost be supposed that the principal business of railroad managers was to combine and concoct schemes to injure the public. There is an impression on some of a sort of gratuitous malice in all they do; that they select the worst men possible to put in every place, and that pains are taken to render every one uncomfortable. Railroad men are not so unwise as these ideas suppose. It has been said that the most able men in the country are now more or less engaged in railroads, and it would be indeed strange if they should not use in that department the intelligence thus attributed to them. It is said sometimes that they cut off their own business by discriminations that dwarf the growth of the country. They certainly know how to take care of their own business, and they know equally well that business depends on the development of the business of the country, and in what are sometimes called discriminations they have this last rather than any other principle in view. It is by no means clear that so-called discriminations necessarily injure a State, or the country, each considered as a whole. Suppose the case of a higher price to a near point than to a far; the far point would have, perhaps, a certain sort of advantage, but that the aggregate advantage and disadvantage would not be equal is not at all apparent. The right of a corporation (which is a created being) to exercise discretion in such a matter is another question, but as regards the single question of positive effect, issue may easily be joined.

A gentleman in Albany largely engaged in stove manufacturing, (with whom and with which business I was once connected,) found that his particular trade had grown to be quite competitive at Buffalo; that people from the Western States came to Buffalo to get stoves. The tolls on the canals proved no small item in the cost of the transportation from Albany to Buffalo, and the gentleman I referred to went to the canal board to persuade them to reduce the tolls somewhat. He said that if it was not done he could not compete with Buffalo, and that the commerce of the State would suffer. A member of the board replied that while they wanted of course to have the business of the canal as large as possible, and would for that reason be glad to see stoves for the West shipped at Albany, still, as regarded the interests of the whole State, it was quite immaterial whether Buffalo or Albany made the stoves.

About the rates and scaling of charges. The tariffs on the New York Central Road are, and, I may say, have always been, progressive for distance. The local rate from Buffalo to New York is somewhat in excess of the proportion of the through rate from prominent points west, say from Chicago; enough in excess to cover the cost of the peculiarities of local shipment from Buffalo, that is, the location expenses, the shipping, handling, &c. This, of course, is when the Chicago rate is in a normal condition. There are times when, owing to some temporarily peculiar condition of things, Chicago rates might fall, when this relation would be very considerably disturbed—the Buffalo rates not settling immediately to meet the disturbance. Anybody who compared them at such a time might find a very considerable difference. The principle, however, on which local rates are made is as I have stated. From Buffalo down the rate is a diminishing rate all the way to New York. It does not diminish for every mile, or at every station. Sometimes at three or four stations near together the rates to New York would be the same; nevertheless, as you get farther down, the rates become less.

It is often supposed that it is always worth less to carry freight a short distance than a long. This is a very mistaken notion. I could, to speak within bounds, mention a hundred cases in which it costs and is actually worth considerably more to carry property a shorter distance than a longer. In an investigation once had before the New York legislature, there was one case presented. A man had two or three carloads of cattle to ship from a point fifteen or twenty miles this side of Buffalo, and he was charged the full Buffalo rate, of which he complained. The fact was, however, that it was, under the circumstances, worth *more* to haul his cattle from that point than it would have been to haul them from Buffalo. The reason, when stated, will be apparent. Buffalo is a point of accumulation, where the cattle business is steady; all empty cars go to Buffalo; all the complete arrangements for doing that business are there. We have our yards, our cattle-men, our loading conveniences, and everything accessory to doing the business at that point efficiently and economically. The cars that this man's cattle would need at the point this side would either have to be left off a train going up, by special arrangement, involving the stopping of the train expressly to leave them, or else they would have to be hauled empty from Buffalo to his place and stop, and a stop made to leave them. Take these considerations, and the loading being an exceptional thing at that place without conveniences therefor, and the company could better have afforded to take even a less amount from Buffalo. Suppose property were offered at a point where there was no station, would it not be easier to take it at the nearest station, even although it might be, say, ten or fifteen miles' more haul? And what is the case as between no station and a station is often the case between different stations, the steadiness of business and the consequent conveniences and arrangements affecting the question. I have stated the general rule applicable to local rates. There are cases, other than the kind just spoken of, in which what are called discriminations are made by a reduction in the nature of a concession to the shippers, and owing to circumstances peculiar to each. For instance, a man has a manufactory, or a mill, and business is dull. The price of his particular product at the time happens to be a little depressed. He says: "I cannot well afford, if at all, to send this to market at the full rate which you are charging." We may perhaps happen to have cars to move empty from his place, or to enable business which may afford a better price by and by may be kept alive, and we make a concession or a special rate to him. As compared with some other place this may look like discrimination, but all the discriminations I ever knew of grew out of considerations of a somewhat similar nature.

If in granting the concession in the case just supposed the company could be held to their action as a conclusive precedent for all persons, whether the company or the persons were similarly circumstanced or not, and could be compelled to make all their rates conform to this special one, they would simply be cut off from the ability to assist that man. That is all there is of it. It would be beyond doubt cutting off the exercise of a sound discretion on the part of the company. The mistake made is to say that at a special rate under these circumstances somebody is injured; somebody is benefited, that is certain, but no one injured. The number of these concessions made is very considerable, and, all circumstances being equal, they are made to all substantially alike.

Mr. SHERMAN. Let me give you a case where I know an actual discrimination made by a railroad.

Mr. WORCESTER. Was it a road I am connected with.

Mr. SHERMAN. No, sir.

Mr. WORCESTER. I should prefer that others should answer for their own sins, if sins they be, or give their own explanations.

Mr. SHERMAN. Several persons were competing in the lumber business and the railroad companies said, "If one of your companies will carry over my road 3,000,000 of feet a year we will reduce the rate 25 per cent."

Mr. WORCESTER. Yes; it was a question between wholesale and retail trade, the relations of which have been fully and frequently discussed.

Mr. SHERMAN. Would not that give to one man the monopoly of the business, where others were competing, and drive the others out.

Mr. WORCESTER. I cannot judge the matter without more knowledge of the circumstances. One thing, however, is certain, and nothing on the face of the earth can prevent it, that a man who deals largely has certain benefits which the smaller cannot get.

Mr. SHERMAN. Ought the railroad company to make it?

Mr. WORCESTER. They are not necessarily accountable for it. A man may say "I can give you so much business." If you can depend on that you may make definite arrangements accordingly. It depends of course on the circumstances of each particular case. I would not say that that necessarily gave him a monopoly of the business. I do not see that that follows. I take it for granted from what I know railroads generally do in such cases, and from what the central would have done in the circumstances you mention, that either of the competitors in the lumber business you describe could have got a similar rate upon agreeing to ship a similar quantity—that is, that, all the circumstances being equal, the same treatment would have been given. The most important thing in connection with the rate of freight, perhaps, is the quantity to be shipped. Anything that regulates rates without allowing fully for the element of quantity in is an utter absurdity. When you ship a certain large quantity, there are circumstances that may well modify action as compared with a smaller. It would hardly be possible to apply a uniform rule with regard to the shipment of large quantities as against small, or as to the exact *unit*. Perhaps as to a car-load as a unit of quantity there can be little doubt. As a rule a car-load is about as easily disposed of as a half car-load.

A newspaper correspondent, writing from Ohio, said that certain roads would not ship grain, unless a car was loaded "chock up," whereas he said they take other people's property in small parcels at the same rate. He simply misunderstood the whole subject. A car can be filled with "parcels" belonging to a thousand people, but grain cannot be mixed. If bagged, however, I think the railroad would have treated it just the same as the other "parcels" were treated. The shipper probably did not want to do this; he did want to go to the expense of keeping his lot separate from that of his fellow-shipper, and the railroad was practically expected to give him a whole car for perhaps a tenth of its capacity, and as I said but now a half-loaded car is just about as much expense in all things as a full-loaded and a tenth-loaded not much less than a half-loaded.

Mr. NORWOOD. From your answer to Senator Sherman, I infer that your idea is that the railroads in the management of their business should be governed by the same rules as private individuals are in managing their own.

Mr. WORCESTER. As to all the broad fundamental principles, entirely so. There are many circumstances in which the corporation differs from and cannot do as the individual would—making the necessary allowance

for these, the rules should be the same. The present managers of the Central have always acted upon that principle.

At the first meeting of the board of directors, after they came into control, Commodore Vanderbilt said to me, "Mr. Worcester, do everything just as you would do it if it was your own business; vary from this only so far as the peculiar circumstances incidental to a corporation demand." All things being equal, that was his idea of correct management.

When I spoke of "concessions" just now, I did not use the word in its strict abstract sense, but as a technical commercial term, meaning a variation from a standard. This explanation is proper to prevent misunderstandings, of which there are already enough. What are called discriminations are comparative in their effect, rather than positive. The question whether one person is charged too high a rate can hardly be claimed to depend upon what another is charged, while, as a rule, all should be served alike, the rate any one pays, stands, after all, quite on its own merits. A man might say, "It is discrimination to give one person a free-pass, and not to give to another." But if he meant by that that giving one was a reason for giving more, he could hardly be sound. This question is often asked, and is sometimes considered quite unanswerable: "If a railroad can afford to carry in one case for a certain rate, why cannot it afford to carry for the same rate in others?"

The fact would probably be that it could not, in one sense, afford to carry for that price, in the one case, but it was all that could be got, and there was no help. There are two kinds of what may be called affording; one is, when profits are diminished, or, perhaps, extinguished; the other is where a greater loss is, either directly or indirectly, saved. But perhaps in the one case supposed the price might afford a small profit, and that it was all the profit that could, under the circumstances, be made. If, now, this one case should establish a rule applicable to all others, even that small profit would have to be foregone, and at the same time the property could not reach market. I feel safe in saying that in all cases where the circumstances were *absolutely* the same, the same treatment would be given. The cry has been that railroads were extortionate, and yet the criticism as to discrimination is founded upon reductions. So far as these are made, so far, at least, the evil complained of is removed. So far as they make differences, the differences called discriminations, that is an involuntary effect. Any attempt to regulate this part of the business of the country by the application of rigid rules would be vastly disastrous to shippers without, probably, in the aggregate, materially affecting the roads. Finally, upon this subject the idea, if such be entertained, that discriminations made for the purpose of building up one locality or interest as against another, or for any purpose other than that of promoting the common interests of shippers and transporters, is a delusion.

MR. SHERMAN. Is not the basis of these discriminations generally competition or non-competition?

MR. WORCESTER. Not generally, by any means; hardly at all as regards a *permanent* reduction. I allude, now, to what is commonly called competition—that is, sharp and special. The opening or development of new lines tends to keep prices at a certain minimum, at which the volume of business becomes naturally divided. "Cuts" of rates, so-called, are usually temporary, and are caused by attempts to make an undue diversion. A person has shipped property over a certain line for a certain time. There is another line between the same points, and when everything is in a normal condition prices are substantially the same by each, founded upon the principles I have already spoken of.

If, now, this other line, by cutting rates for a few days, could divert to itself the business of the person referred to, it might undertake, during that time, to do his business for almost nothing. In self-defense the first line would, however, follow the "cuts," for the person in question would not come back to it again if once he went to the other. All this is unhealthy, even for the shippers, for they cannot be well served, in the long run, by such circumstances, and no sensible railroad manager would take measures of the kind I have spoken of unless they should be, (as is sometimes the case,) a means to force the adjustment of disputed questions that could not otherwise be settled—and even then it would have to be the excuse of absolute necessity.

Upon this subject of variation of rates generally: If uniformity of rates be represented by a straight line, variations may be represented by a line falling below and again rising to such straight line, or by a notched line, if I may so call it. It is evident that the notched line could be made a straight one just as well by filling up the depressions as by cutting off the elevations, and, in the railroad analogy, this could be the only means of making uniformity; and this in practice would be the absolute prohibition of carrying unless the property or business would bear a certain and invariable standard rate.

The next subdivision made by the committee is facts in relation to the cost of railroads and alleged issues of fictitious stock. As to the first clause of this subdivision, I purposed submitting some carefully prepared tabulations as to the cost of roads, and also the cost of operating, &c.; and, in order to make them of more value, by means of comparisons, I sent to England for somewhat elaborate statistics of the roads in that country. I was aware in a general way what the comparisons would show, and I think they would have proved interesting and instructive. As, however, there has been delay in the arrival of the figures, I will ask permission to submit anything I may prepare from them at some future time; and as to the second clause there has been as much said upon this branch of the committee's inquiry as upon any other, and perhaps even more than upon any other branch. "Watered stock" has been the term commonly used, and the roads with which I am connected have generally been considered prominent examples in that respect. The cry of "watered stock" has been used until it has become in its frightening effect almost like the cry of "mad dog." In the minds of many people it has become almost a conviction that the mere existence of a capital stock at all is evidence of "water;" and a still greater number feel convinced that any increase whatever, for whatever purpose, is undoubtedly "water," and is made for and only for the purpose of having an excuse for demanding higher rates.

The committee has used the word "fictitious," which has a certain sense of being unauthorized or illegal, but I take it for granted that the meaning was that generally understood by the popular term I have mentioned.

There is such a thing (to use, as I shall, the popular expression) as essentially watering stock. There are other things that might be constructively called watering, and there are a great many things which are *now* called watering that are not, in any proper sense of that word.

I have heard it said that any company that had, by any process, for any reason whatever, increased its capital—and by capital I now mean both capital stock and debt, the amount on which it is supposed the business of the road is to pay a revenue (supposing, of course, it pays any) beyond the amount it was at the first organization of the company—

had watered it. Strange as this may seem, it has not been an uncommon or unfrequent proposition, soberly and even emphatically laid down.

Next, what were called dividends of stock, or the distribution of stock to stockholders by any process whatever, was water; the combination or consolidation of two roads or the absorption of one road by another, and the addition of one capital stock to another, was water. As an instance of this last, there was a road built from Athens to Schenectady Junction, at a cost of upward of \$2,000,000. It was subsequently leased to the New York Central, and under an act of the legislature it was afterward practically consolidated. The cost of that road was thereafter counted in the cost of the New York Central Road, and the amount of its capital stock was added to that of the New York Central. I have heard people say that that transaction was watering in the New York Central stock. There is just one way for ascertaining how much profit a railroad company has made: What profit it has made is just and strictly the difference between the amount it has received from its operating and the amount it costs them to do that operating. In the English companies it is a uniform rule not to divert any of the money that they have made to any other purpose, but to keep or use it entirely for dividends. The consequence is, a dividend may be one per cent. for one-half yearly period, and eight or ten for the next. They then invariably borrow, or capitalize by the issue of bonds or stock, whatever amount is needed for improving or increasing the capacity of the road. Capital and revenue are kept entirely separate. In this country the custom has been quite different. I am now, of course, speaking of roads that pay dividends. A railroad that was making enough profit to pay dividends at all would endeavor to pay a uniform one. That has been looked for, and the custom in that respect has universally obtained, as has also the one of never raising any money especially for capital purposes, if there was any money even belonging to revenue account that could be used. If a company wanted a building that cost say \$10,000, it would in the first instance simply take that amount out of any means in its treasury; other buildings or cars, engines, new tracks, &c., might be needed and similarly paid for; and so, when a dividend period came—assuming that these buildings and other items were things that represented the material property of the company—it might find that it had spent its “revenue” for this “construction,” while this last is a subject for, and, properly, only for, an expenditure of “capital.” Stock or bonds may then be issued or sold, and this process is called borrowing money for dividends, and, with admirable consistency, the “capital” created is called “water,” and an additional emphasis is given to the word if the new capital should be issued direct to the stockholders instead of being sold outside. That is a grave error. Any stock or bonds issued by any process whatever, through any channel at all, by stock-dividends, or anything else that represents money that has been expended on the road for any substantial improvement or increase of capacity, is strictly and beyond question legitimate; and this is true even if it is not for a regular but an extra dividend. In either case it is simply giving to the stockholder instead of the money to which he is entitled, from the revenues of his property, something to represent that money and making him a sort of involuntary contributor to the capital account.

There is another kind of expansion of capital, and perhaps it is the only one that approaches the real meaning of watering, and even that is entitled to some consideration as to its nature. Suppose a case in which there is an issue of stock not represented in the original cost of

the road, but which may be represented by what may be the expanded value of the material property. There is an idea abroad that there is a very large amount of expansion in the value of the materials appertaining to a railroad, which is a great mistake. Very little of it expands in value except simply the item of land. The rails, and superstructure, and buildings, and all the equipment could at almost any time be replaced at their original cost. There may be an idea of expansion growing out of the favorable operations of the road; that is to say, if it is profitable it might be the basis of capitalizing the revenue it might be able to pay. If, to suppose an extreme case, it could pay 20 per cent. on an existing capital, it could pay 10 on double that amount, and yet there would be no change in the value of the actual property. This is like estimating the good-will of a business.

Now, about the return that stockholders in railroad companies are fairly entitled to receive. It seems to be taken for granted that while they may run all the chance of no return whatever, 10 per cent. per annum should be the maximum. Money in Wall street for March and April last was worth an aggregate of 6 per cent., equal to 36 per cent. per annum. I know of money borrowed that cost 6 per cent. for the use of it for those two months. Men put their capital in railroads, taking their chances of prosperity. When there is no prosperity it is all right; when there is prosperity its degree must be limited to 10 per cent. This is a sort of *ratchet* arrangement; you can push it one way as far as you choose, but you cannot pull it the other way, for it catches. Why 10 per cent. should be so generally taken as a maximum is very difficult to determine.

I saw an article in one of the New York papers a short time ago, proposing that Government should build a double-track air-line railroad with steel rails, and to be used exclusively for freight from New York, I believe, to Chicago; trains to run at the uniform rate of eight miles an hour, &c. It was either to be built and owned by the Government, or, if a corporation would build it, it was proposed to allow it 12 per cent. on the cost. This was an exceptional proposition, but it will be long before capital will seek an investment in any enterprise where, primarily, the chances are against it, with even such a limitation. Capital has the experience that the entire railroad system of the country does not get 4 per cent. on the actual cost. I now mean cost without including any expansions of capital, and I am fully justified in what I just said, that, primarily, the chances are against it.

Some twenty years ago I used frequently to meet gentlemen from England, who were in the habit of coming over here and looking into what was then our somewhat undeveloped railroad system, with a view to investing. Away back as long ago as that, they used to say, the capitalists who came over here—and I could mention names whom you well know by reputation—"We should be glad to put money on this side but for the uncertainty as to what your legislatures will do." The fear of adverse legislation in case of prosperity was what kept their capital from coming here, and our own capital has been similarly affected. The consequence of this has been that, instead of good healthy capital, such as might have been brought into use, an artificial or stimulated capital has been introduced by means of municipal and State aid, the bonding of towns, and many other unhealthy financial schemes. The amount of town bonds in the State of New York is enormous, and all issued for purposes to which capital would, under the proper conditions, have gone in the natural way. I think every one can understand a low limitation on any kind of business when accompanied by a guarantee; but when the risks

are taken the matter is far from being so clear, and these risks are constant and not removed, even by years of comparative prosperity.

It has been said, and with much point,

"For what is worth, in anything,
But so much money as 't will bring?"

While we may not fully assent to this, we all know that the sale of anything that is the fit subject of transfer is the only real test of value. What the risks on investments in railroad stocks are considered to be, is sufficiently indicated by the fact that a bond which guarantees 7 per cent. is worth fully as much as a stock that expects to pay 10, even with chances for more. In the case of the New York Central, its six per cent., unsecured bonds, rule as high as its stock on the expectation of 8. If Wall street be mentioned, it must be remembered that the prices of the bonds are made there, as well as those of the stock.

I spoke, a little while ago, of the supposition that large or increased capital was made the basis, or, as it has been sometimes called, the excuse for high charges. It has often been said, "they are collecting higher charges now than formerly, for the purpose of paying dividends on their increased capital;" or, "they made their capital larger for the purpose of taking more money out of the people." The amount of capital has nothing whatever to do with charges. The amount taken is one thing, a thing by itself, and is what the business will bear, considering always the circumstances of which I have spoken in that connection. When it is ascertained what the net product of these charges—

The CHAIRMAN. Can I interrupt you with a suggestion? Suppose that all the leading railroads from the interior to the sea-board double their capital-stock, will not the charges be higher than they are now?

Mr. WORCESTER. Not a bit.

The CHAIRMAN. Are not these charges for through freight fixed by the railroads in competition with each other; and if this stock was doubled and you were compelled to pay double the amount to your stockholders, would there not be less competition than there now is?

Mr. WORCESTER. I can answer that, and illustrate the answer by asking a question about one of the through lines. The Erie does not pay dividends—it has doubled its capital—why doesn't it put up its rates?

The CHAIRMAN. They are hoping to, are they not?

Mr. WORCESTER. As to that I am unable to say.

The CHAIRMAN. Suppose they should all adopt the principle of doubling their capital-stock, would it be possible then for them to compete with each other upon the same rates?

Mr. WORCESTER. Entirely so. It would not depend on the rate they wanted to get, but upon the one they could get. The New York Central might double its capital-stock, and it could not if it would increase its rates.

The CHAIRMAN. But are not railroad men like other men, somewhat anxious to pay a fair dividend?

Mr. WORCESTER. Yes, sir.

The CHAIRMAN. And would they not be likely to combine to do it?

Mr. WORCESTER. Rates cannot be put up beyond a certain point—business will not bear it. Beyond that point combinations can effect nothing. There are certain laws of commerce so immutable that combinations can no more affect them than can legislation.

The CHAIRMAN. Suppose, in this case, that there is no water communication and only the five railroads, and they double their stock, don't you think it would be more likely that they would pay a fair dividend

to the stockholders—because I suppose that stock goes into the hands of parties who pay a consideration for it eventually—and could they, in justice to these stockholders, carry for the same rates that they can now?

Mr. WORCESTER. There never was such a thing heard of as a company that increased its capital-stock as an excuse or occasion for putting up rates. It could just as well put up rates if the business would bear it without increasing the capital, and, if able, pay double the rate of dividend. No company would double its capital or increase it as an excuse for demanding higher rates.

The CHAIRMAN. But having doubled it, and all having doubled it, would it be in their power to carry at the same rates and pay a fair compensation to their stockholders?

Mr. WORCESTER. The aggregate compensation to the stockholders would be just the same even with the same rates; with a doubled capital the dividend per cent. would simply be half as much. If an attempt should be made to double the rates so as to pay on the doubled capital the same per cent. dividend as was previously paid, the diminution of business would probably make the result a less aggregate compensation to the stockholders than before. The ultimate element of prosperity in any kind of business is this: *The maximum volume at the maximum price*; and this principle is of absolutely universal application.

The CHAIRMAN. I do not doubt your rule as matter of theory in putting on the prices that the products would bear, but it seems, by your own statements, that they would bear much higher rates from nearer points than they will from further points, and would they not bear a little more if you had to pay more dividends?

Mr. WORCESTER. There are places on our line where as a mere matter of ability we might charge, we will say, a hundred dollars to take a single barrel of flour to say a market-place, or else make the owner team it or carry it in his pocket, perhaps; but we do not do that. It is possible, as a mere abstraction, that a road might charge anything it liked between points where there was absolutely no competition; but the principle I just now laid down would really regulate. The question you ask is, however, hardly one of practice, because no road ever had or has any intention of doing anything of the kind.

A writer in the Nation, of a few days ago, had an article on "watered stock," and he spoke of the fact, well known to all railroad people, that the companies having the largest capital, and that had watered, as it is called, the most, are doing the work cheaper all over.

The CHAIRMAN. That proves that water lines are cheaper than railroad lines?

Mr. WORCESTER. It certainly proves that *watered* lines work the cheapest.

Mr. CONKLING. Let me understand you. You say, if I understand you aright, that rates of freights are grounded, not upon the doctrine of investment and return for investment?

Mr. WORCESTER. I say that.

Mr. CONKLING. You say, on the contrary, that they are gauged upon the doctrine of supply and demand?

Mr. WORCESTER. Entirely so.

Mr. CONKLING. And your mode of expressing that is what freight commodities will bear?

Mr. WORCESTER. Yes, sir.

Mr. CONKLING. Is it not true, speaking of special charges granted in

the past and of general railway acts existing now, that a maximum of percentage is usually fixed in those acts?

Mr. WORCESTER. Yes, sir.

Mr. CONKLING. Is it not true then in the case of every railway organization, that when their profits come up flush to that maximum, or begin to exceed it, that a direct motive exists for some device by which dividends shall be spread over a capital, so that the percentage will not exceed the limit?

Mr. WORCESTER. Let me inquire whether you suppose the limitation, which is in most charters and general railroad acts, is fixed upon the dividends to be paid on capital stock? It is not in any case.

Mr. CONKLING. Not in any case?

Mr. WORCESTER. None that I know of.

Mr. CONKLING. I was coming to that; upon what is it fixed?

Mr. WORCESTER. It is fixed upon the cost of the road.

Mr. CONKLING. The actual investment?

Mr. WORCESTER. Yes, sir; therefore even under the strict construction of say the New York act, which contains a limitation, the amount of capital stock could not be considered. The question would be, had it made more than so much per cent. on the money invested.

Mr. CONKLING. Is it not true that whenever the profits of a railway exceed or endanger the limit, that a motive exists for some device, if one can be invented, of bringing the same amount of return to the stockholders within the licensed limit? That must be so.

Mr. WORCESTER. When the prosperity is considerable there is an inducement to increase the capital. It covers, to some extent, the rate of dividend, and has been done on some roads for that purpose; and always because existing rates warranted it, and not as an excuse for higher rates.

Mr. CONKLING. Suppose a railroad capitalizes, as you express it, or by some other form or name, I do not care what, issues stock for betterments—for earnings which have gone into the construction and maintenance of the road; does not that become parcel of the capital in respect of which the percentage of dividends is by law graduated?

Mr. WORCESTER. It does. Any money actually expended on the road for construction, enlargements, or improvements, excluding, however, maintenance, enters into the basis of computation.

Mr. CONKLING. How can you say then that if a railroad company, by one mode or another which should conform to the statute requiring to represent cost, enlarges or doubles its capital stock, that it is not then in position to charge rates increased or doubled, provided, of course, always, the commodity will bear it much greater than it would charge upon a smaller cost or smaller capital?

Mr. WORCESTER. A question of disposition to charge would be one thing, the question of ability to charge would be another. The ability to charge depends upon what property will bear in view of its moving to market, in view of the development and magnitude of the business, and considerations of that kind. With a doubled capital stock, there might be an inducement to a road to increase its rates, if those rates would bear an increase; it would be found, however, in every case I ever knew of, that rates were already as high as the business would bear in view of all the circumstances, and of the principle of the maximum amount of business of which I spoke. When it has been found in some cases that these already existing rates produced more than a certain percentage of revenue there has been a capitalization, but this has been an effect, not a cause.

Mr. CONKLING. After all, is it not true that cause and effect so blend together there, that without being too philosophical, they are related to each other and do affect each other? Is it not true that, if a railroad could carry wheat for 15 cents a bushel from Chicago to New York, and divide 8 per cent. upon a capital of \$25,000,000, when that capital is increased to \$45,000,000, that a direct inducement, whether by way of consequence or cause has been created to charge 20 cents or 25 cents a bushel, provided they can compel the shipper to employ their lines?

Mr. WORCESTER. I said before that where the capital is increased the inducement would exist. But the inducement would end with an inducement, because in all cases the highest rate to be obtained in view of all the surroundings of business would have been already obtained. A few minutes ago, the committee was considering a case in which it was an implied allegation that rates were too low, the case of so-called discrimination. I endeavored to throw some light on that case, and I refer to it now in order to say that the implied allegation in that answers in no small degree the particular line of inquiry we are now upon.

Mr. CONKLING. I should see the whole force of that if the case contained one element, and that is the element of thorough and complete competition. I see why it is that no man on Broadway can charge for a given quantity of dry goods more than so much a yard, because every man around him is selling in open market, and the law of supply and demand will regulate it; but, if Mr. Stewart were the only vendor of dry-goods on Manhattan Island or near there, the case would be different; so, when you assume a through line without a vigilant and able competitor, I do not see the warrant by which you say that you cannot carry freights above a certain point, thereby meaning that point which represents fairly the doctrine of equivalents. You come then to the consideration meant by monopoly. If you have a load of oats to send, and I am the only man by whom to send it, if I charge you so much that you realize nothing, I do not see why you are compelled to send it.

Mr. WORCESTER. If Mr. Stewart wanted to make the greatest possible amount of profit he would, however, have reference to the development of his trade—profit being the product, the volume of trade and the prices obtained are the factors, and he certainly would not foolishly increase one of these factors by any measures that would unduly diminish the other. He would maintain them both at their relative maximum—causing thereby the largest product, and in the other case you present, if I expected you to continue to raise oats and to continue to employ me to carry them to market, I should, if I acted wisely, keep the rate at a point that would encourage you to grow oats.

The CHAIRMAN. Practically has not that point been reached, where a certain article, the heaviest product in the list, cannot go to market?

Mr. WORCESTER. There might be a case in which the carrier of oats would have to pay more for the feed of his horse while carrying to market than his whole load was worth; or in which the oats he was carrying would not feed his horse on the journey. Sometimes a steamer cannot carry as much coal for cargo as she needs for her own fuel; and it is a small distance a man can travel and carry his own supplies.

There is a point at which the movement of property would cease. I settled, in my own mind, many years ago, a point from beyond which rail transportation to the sea-board would be impracticable. That point

has, however, been vastly removed by reason of the reduced rates consequent upon the through lines of cars—the lines which you have just had under investigation—and a vastly increased area of production has been developed and rendered contributory to commerce. I should not like to venture on naming a new point just now, but that it exists is unquestionable. This is perhaps insufficiently appreciated by many.

I said a little while ago that any increase in the capital stock of a company, of the kind usually denominated “water,” was a consequence and not a cause; a consequence of prosperity or success, and not a cause for demanding higher rates. To that statement I now want to add that the prosperity or success of which I spoke is not due to the prices received for performing certain work so much as it is to sound economy, by the exercise of good judgment and skill, in the expense of performing that work. And as these, good judgment and skill, are no part of any granted franchise, but are the undoubted individual property of those who exercise them, it would be a rather startling proposition to say that they were not entitled to, or could by any means be deprived of, the benefits growing out of their exercise.

I make these statements now, so that they may be referred to in some of the further remarks I shall make.

I have fully explained the principle upon which practically the maximum rates can be charged, and if now a practically minimum rate can be ascertained we shall have the two extreme points between which the rates may fluctuate. This practically minimum rate is the one that it is necessary for the most unfavorably situated line, the one the most expensive to operate, or the one that has but the fair average skill in management, to receive in order to pay its way without giving any return to its stockholders. Practically all the trunk-lines of the country are in competition, and a line of the kind I have just described has its rates regulated, to all intents and purposes, by any measures that regulate those of its competitors, so that all receive substantially the same prices. If, now, anything should be done, by either general or special means, to affect below a certain point the business of the line the more favorably situated, the less expensive to operate, or that has in its management peculiar skill, the line I have been describing is destroyed. This is well worth remembering. The result is inevitable.

The Erie Railroad Company made a small dividend the other day, and, although it is said its capital is largely “watered,” the amount of money required to pay the dividend I refer to would not have made much of a one on its capital when squeezed even below the lowest water-mark. One of the New York papers published several elaborately prepared articles to show that even that dividend, small as it was, had not been earned. It was very decided upon this point, and its force of assertion and array of facts were remarkable. Suppose, now, that by any process the rates on lines that may have been somewhat more prosperous than the Erie were taken below the point at which it appears that that line made substantially nothing; how long could it be run? And if, as the cry is, there is such a lack of capacity in the railroads to do the business, how would the question of movement at all be affected? Unless the natural law of demand forced the prices back to the minimum point at which they stood before, the movement would be certainly diminished by the capacity of one line.

The committee here took a recess of fifteen minutes.

The Committee met pursuant to adjournment.

Mr. WORCESTER. I was speaking, Mr. Chairman, about what is called watered stock, and of the only thing that constituted what could by any possibility be at all fairly called water, as against a number of things that were frequently called so popularly. The only case, I suppose, in which expansion can fairly be called water, is that of capitalization of the increased valuation of the road or property over its actual cost when originally and from time to time constructed or acquired. Such increased value carries with it, however, the idea of prosperity. A very large part of the value of railroad property is merely the capitalization of what net revenue it can have. Excepting what may be called its personal property, which can be removed, and the value of its real estate for other than railroad purposes, there is very little value in a railroad at all. Prosperity is what constitutes the principal, if not the only value in its property.

Mr. SHERMAN. You would capitalize the net incomes?

Mr. WORCESTER. That would be sound and perfectly proper. It is a question which has been discussed a great deal, whether the proper cost of a road as regards its relation to the public should be taken at what it originally cost those who built it, or at what it would cost to put another road of the same kind in the same place under the existing condition of things. Without going into details on this point, I wish to express an opinion, founded on careful and long observation, simply, however, for what it is worth, in view of the circumstances. There is not a main line of road of any magnitude, and especially is this true of the New York Central and Hudson River, which, with its complete appurtenances and accessories, could be replaced on the same route to-day for the amount on which the public are paying a revenue.

Mr. SHERMAN. In other words, I suppose that the Central and Hudson River roads, could not be replaced for a hundred and two or three millions?

Mr. WORCESTER. For nothing like that.

Mr. CONKLING. With all its structures and equipments?

Mr. WORCESTER. Yes, sir. A person not familiar with the subject has no adequate idea what it would cost to put such a road anywhere at all through the section of country traversed by that line, and it may even be a strong question whether it would be possible, in view of present circumstances, to now construct a road at all, at any price, on some of the locations it occupies.

Mr. SHERMAN. Rights of way have, I suppose, vastly increased?

Mr. WORCESTER. Yes, sir; and about everything else connected with the cost. When I illustrate by the New York Central and Hudson River, it is because I am more familiar with that line, and use it, therefore, more intelligently than I could any other; but all the broad general principles applicable to it apply equally to the whole system.

It is said that the New York Central is very prosperous; that it is paying on a largely increased capital, capital not represented by actual cost, and many other things of that kind. I laid down the principle a little while ago that it was not so much the amount of money received as it was the amount of money saved that really constituted prosperity in a road; that the saving incidental to ability to manage economically was a thing that was necessarily to the benefit of those who possessed and exercised such ability, which would hardly be exercised beyond a certain point, certainly not beyond the point which duty only demanded,

unless there was at least a part participation in the benefit resulting from such exercise. Look at the Erie and the Central, with regard to what each takes from the public and what each pays to its stockholders. They get the same prices on the through business. The Erie on its through business receives from the public for the same amount of work the same amount of money that the Central does. The local tariff on the Erie road, while I do not say this by authority, is certainly as high, and I am perhaps safe in saying somewhat higher, than that on the New York Central. This is so for a number of reasons. The New York Central has a considerable amount of local business that is peculiarly situated, and has to be carried low to promote the business. Then, about passenger-fares. The Erie Road on its through fares receives just the same as the New York Central. The rule that the shortest line, all other things being equal, or otherwise the line which for any reason is limited, makes the rate for all other lines is invariable in railroading. That is, the rate such line has to make the others have to take. The consequence is that the New York Central passenger-fare limitation to two cents per mile limits the Erie. This passenger-fare limitation on the Central is worthy of some attention while it is before us. That road will earn this year, stated in round numbers, \$7,000,000 from passengers. They are carried at the uniform rate of two cents per mile. The rate of three cents, that, as a rule, all other roads have as a minimum, many receiving considerably more, would make that amount \$10,500,000.

Mr. SHERMAN. That is if the increase did not diminish the number?

Mr. WORCESTER. The higher rate would, no doubt, affect somewhat the number carried, but passenger business is hardly as sensitive in this respect as freight business. The latter is connected in the minds of those who contribute it with the idea of profit, while the former is not. This 2 cents per mile is not simply 2 cents as a general rule, but it is 2 cents a mile invariably and under all circumstances, and is so rigidly applied that if we had one station two miles from another there would be just 4 cents difference; if it were one mile, it would be 2 cents and no more. To show how strictly this limitation is enforced, we leased a line where the legal rate was 3 cents, and our consolidated line used a part of the leased line in common; when it came to establishing fares between certain points, we were advised by our counsel that we had an undoubted right to charge in one case 3 cents under the lease, instead of being limited to 2 cents under the consolidation. I objected, feeling that some question might arise, and thinking it was not worth while to take any chance whatever. Our counsel was, however, perfectly clear, and we acted accordingly.

Mr. DAVIS. Do I understand that if you had two stations one mile apart the fare between them would be 2 cents?

Mr. WORCESTER. Yes, sir; and we should, in such a case, stop a train and let off a single passenger for 2 cents. We have no stations just one mile apart, but we have several that are but two or three miles, where we charge 4 or 6 cents. I would say here that out of the six or seven millions of persons that get into the cars of the New York Central in a year, largely over one-half ride less than twenty miles, and pay us less than 40 cents apiece.

In the case I was speaking of suits were commenced, and a decision was made that our construction was wrong. The extra fare that under this decision we had collected was about 3 or 4 cents on each passenger. There is a law of New York imposing a penalty of \$50 on railroads for "extortion." These suits were for that penalty, and were promoted by persons who hunted over hotel registers and things of that kind until

they ascertained cases enough to make the penalties involved nearly half a million of dollars. And until a decision—not, however, in one of our cases—that this penalty was in the nature of a notice, and, therefore, could only be imposed but once for each individual, we were held liable for extortion—the nature of which you will understand from what I have said—from persons who, as it appeared, had ridden up and down daily for the express purpose of collecting the penalty.

The local fare on the Erie is rather more than on the New York Central. I think that road still has some of the rights conferred by its original charter, which may go beyond the 3 cents allowed by our general railroad act. At all events, its local passenger fare is considerably larger than ours.

The CHAIRMAN. I will state that one complaint I have heard very frequently of your road is that because you are limited to 2 cents a mile you do not furnish, in ordinary cars, those accommodations which are furnished by other roads, but that people are compelled to pay for drawing-room cars and more expensive cars in order to pass comfortably over?

Mr. WORCESTER. I have heard that said, sir; much oftener, perhaps, than you have. It is a very common, although unwarranted, statement.

The CHAIRMAN. It is alleged, I say, to be done.

Mr. WORCESTER. We run certain trains of through cars that are intended to be limited to drawing-room cars—special trains—not the kind of trains at all that were ever contemplated by any law; trains growing out of modern progress and improvements. For instance, the Saratoga special is a train intended to run especially from New York to Saratoga, in order to accommodate that particular travel. It makes few stops. People sometimes say that we make them so few just so that they cannot be accommodated. The fact is, however, that if we undertook to accommodate the general public on that train or similar trains, we could not run at the speed necessary to promote the special travel, and the purpose of the train would be defeated. That passengers are forced into drawing-room cars is entirely a mistake. I have known cases in which people have unexpectedly come in excess of the capacity of the common cars that were appropriated to a particular train, and there has been temporary difficulty in providing for them. There never was the slightest intention, however, of forcing anybody into the drawing-room cars. The purpose is, in fact we are required, to run enough cars to accommodate all those who apply for passage in the ordinary cars. There is, too, sometimes, a great deal of criticism about the quality of ordinary cars. Opinions as to quality differ very much. When I first became connected with the road, ordinary cars cost us about \$2,500 each, but now each such car costs \$5,000 or \$6,000. Whether that difference in cost gives any better accommodation, you can judge. During the past year our passenger equipment has been very largely renewed; and while there are very good ordinary cars on other roads, I should not hesitate to have ours compared with them. Opinions as to quality are often affected by circumstances. I have been on a road when I could hardly see for dust, and the next day not a particle of dust was to be seen. In the first instance many would be inclined to think the road itself very bad, while in the second their opinion would be modified. A person occupying a car that “teetered” might say the road and rails were very rough, but on going into a car, even in the same train, that happened to be “hung” differently, he would say it was very smooth. And in many cases the frame of mind a person is in affects his opinion. The intention of the road—and it is made a matter of sober consideration—is to afford all the convenience and comfort, and everything of that kind for the traveling public. There

is a recognized propriety in this on the part of managers. Even where there might not be an absolute obligation and the supposed indifference, or, as it is even said, attempts to gratuitously discommode, is one of many other misapprehensions.

Mr. NORWOOD. I understand you, on all these trains when you have these palace-cars, you always have a sufficient number of ordinary cars to accommodate people?

Mr. WORCESTER. That is the intention. We now put on a certain number of common cars on every train. At one time we undertook to run between certain points certain trains, called "special expresses." They were not intended to take up much, if any, between those points, say between New York and Saratoga, for illustration. It was intended originally that they should be composed entirely of palace-cars, being put on in excess of the ordinary trains run for local use, and to relieve those trains. Putting them on was entirely a matter of volition; and as they were to accomplish a specific purpose, general travel going on them would have entirely defeated their purpose. And while this would have taken away all the benefit from the general travel, it would, also, have taken away all benefit from the special travel. But all trains are now run with more or less ordinary cars on enough, usually, to fully accommodate the people who wish to occupy them. There is sometimes a rush, and sometimes passengers want much room; but there never has been a case of leaving off a common car for the purpose of forcing anybody into a drawing-room car. Occupying them is entirely a matter of choice, and sometimes fault is found because there are not more of them and less of the ordinary ones.

I was speaking of the local passenger charges on the Erie road being higher than ours; that the money received from the public by that road for a given service would be more than the money received by the New York Central road for a similar service.

The CHAIRMAN. As I understand it, your freights are higher than theirs?

Mr. WORCESTER. Local do you mean?

The CHAIRMAN. Taking the average freights.

Mr. WORCESTER. I think not. They are, on the contrary, considerably less.

The CHAIRMAN. I have a statement which I will show you presently in regard to the matter.

Mr. WORCESTER. Their rates are higher. Their through-rates are substantially the same as ours, and their local rates are more.

Mr. DAVIS. Are your freight and passenger rates alike limited by law?

Mr. WORCESTER. No, sir. The passenger-rate is limited 2 cents a mile on way-passengers. There is no limitation on through, and there is no limitation on the rate per ton per mile on freight; that is practically regulated by the considerations I spoke of a little while ago.

(To the CHAIRMAN:) With regard to the statement you show me. You have down simply the rate per ton per mile. You must, however, consider the fact that the Erie road carries much of a kind of tonnage that we do not carry.

The CHAIRMAN. I wanted the explanation because I wanted you to state that, notwithstanding your increase of stock, you were carrying cheaper than the Erie, which was not paying dividends.

Mr. WORCESTER. You understood my statement correctly. With regard to any apparent difference, the Erie Railroad carries very considerable quantities of coal, lumber, and freight of that kind. To such

extent as we carried the same kind of freight, our rates would be lower than theirs. On similar kinds of freight our rate would be lower than theirs. The freight on the New York Central is very largely first-class freight, that which pays the highest price, and this affects the figures you have. Our rate on local freight is lower than theirs for the same kind of freight. I make these statements, not by way of reflective comparison, but only for the purpose of illustrating the case. One road, then, gets, we will say, the same amount of money from the public as the other. It is of no consequence just now how large the capital stock of the Erie may be. Whatever it is, the receipt by that road of certainly as much money as the Central would receive for a similar service does not produce any net result at all to its stock. I explained a short time ago about a small dividend it had declared; but the statement is substantially true that it makes no return to its stockholders. The difference in prosperity between the two roads is caused partly by the advantage of the route of the Central, but mainly by the skill exercised in its management. This fact is the real secret of the thing. That skill is the property of those who exercise it.

To take another view of the subject. If the New York Central, without committing any extravagance whatever, or making any really unnecessary expenditure of money, by merely permitting its expenses to grow to the point where they constantly tend, by simply letting up the constant oversight it keeps on its expenses, would, almost before it knew it, reduce the dividend results one-half. This is a perfectly plain matter to those who are familiar with the subject. For illustration: I am paid a certain salary. It might be doubled without objection on my part. If I should tell you what I get, you, perhaps, might say that double was no more than I was fairly entitled to. I am quite sure you would not say the double amount was a *waste* of money. And what would work in my case would work similarly through all the *personnel* of the road. This alone would put up the expense enormously, and what is the case with regard to labor in its various forms is equally true of supplies of every kind and of everything that enters into expenses. Rails are offered, we will suppose, at a certain price. It might be said, with truth, "That is an ordinary, fair market-price; certainly not extravagant. We will purchase." This course would, no doubt, be all that duty could require. But suppose, now, that instead of stopping there, a deal of troublesome pains was taken; that by getting one man to compete with another, buying at certain seasons of the year, and paying cash; that by planning, even at the expense of sleep, and by availing himself of every fair business means, five or ten dollars a ton could and should be saved, where should the benefit rest? These are the things that constitute skill in management, taking no more from the public, but making every dollar expended do its legitimate work, and by this comes the profit that the New York Central makes. When I say the New York Central dividends would, under the circumstances I named, be reduced at least one-half, I speak entirely within bounds. My knowledge of how its affairs have been managed from its very beginning tells me that. It might even be a question whether it could go on paying any dividends at all, if the rigidity of the rules by which expenses are regulated were simply relaxed, without any extravagance whatever being encouraged. To make a restatement, the dividends paid are not due so much to the amount of money received as they are to the skill with which the road is operated, and the saving resulting from the exercise of such skill.

Mr. DAVIS. Could it not be done in another way, by charging to con-

struction what belongs to the running expenses, or to the general expenses of the road? You could reduce that way, couldn't you, or add, as you chose?

MR. WORCESTER. Yes, sir; but that would not be profit in fact, and any so-called profit made by that means would certainly not be obnoxious to the allegations made against railroads concerning their profits. The cry used to be that that thing was done. The cry is now the other way. I can remember a time when, if a road charged anything whatever to construction, it was said they were practicing a fraud on the poor stockholders, who were thereby deluded into the idea that it was making a profit when it was not. Now it is just the other way, and it is said, "You charge everything to expenses and are taking money from the public." When Mr. Corning, Mr. Keep, Dean Richmond, and that class of men were managing the road, the Central paid 8 per cent. for a small part of the time, but for a large part of the time but 6 per cent. From 1853, the time of the original formation of the New York Central road, down to 1868, when the Vanderbilt people came in, the average dividends paid on the stock were a little less than 7 per cent. That was on what was called the old stock, not increased by any operation whatever. During all that time, however, the rates of freight were considerably higher than they have since been. In 1865, the last year that Mr. Richmond managed the road, the average per ton per mile, including all classes of freight, was 3.26 cents. In 1866, the year that Mr. Keep managed it, it was 2.87.

I beg to submit a table showing the tonnage, mileage, average haul, earnings, and rate per ton per mile on each through and way freight from 1862 to 1871, both years inclusive, being ten years. The year 1872 has not yet been prepared in this particular form, but I would state that the general average is within $\frac{1}{100}$ of a cent of 1871. It must be remembered in looking at this table that it is founded upon a very large proportion of first-class freight. The reduction in 1870 and 1871 is worth special attention; the rates then (and in 1872) were much lower than ever before.

New York Central Railroad.

Freight, from 1862 to 1871, inclusive—ten years.

Years.	Tonnage.		Mileage.		Average haul.		Earnings.		Per ton per mile.		
	Through.	Way.	Through.	Way.	Through.	Way.	Through.	Way.	Through.	Way.	On all.
	Tons.	Tons.	Miles.	Miles.		Miles.			Cts.	Cts.	Cts.
1862	777,000	610,000	233,000,000	64,000,000	105	4,573,000	\$1,728,000	2.10	2.70	2.22	
1863	824,000	624,000	247,000,000	65,000,000	104	5,578,000	1,857,000	2.26	2.85	2.38	
1864	766,000	790,000	230,000,000	84,003,900	106	5,711,000	2,758,000	2.49	3.23	2.70	
1865	640,000	634,000	192,000,000	72,000,000	113	5,671,000	2,980,000	2.95	4.13	3.26	
1866	743,000	858,000	223,000,000	108,000,000	125	6,050,000	3,462,000	2.71	3.20	2.87	
1867	833,000	834,000	250,000,000	112,000,000	134	5,298,000	3,605,000	2.12	3.21	2.46	
1868	851,000	994,000	255,000,000	111,000,000	112	5,674,000	3,816,000	2.23	3.43	2.60	
1869	1,189,000	1,093,000	356,000,000	118,030,000	108	6,451,000	4,006,000	1.81	3.31	2.21	
1870	1,547,000	1,323,000	404,000,000	150,000,000	113	6,774,000	4,187,000	1.41	2.78	1.78	
1871	1,903,000	1,344,000	571,000,000	160,000,000	119	7,177,000	3,700,000	1.27	2.31	1.49	

MR. NORWOOD. Have you the dividends of the road for the respective years?

MR. WORCESTER. I have not in the form of a statement, but they

were an average of a little less than 7 per cent. The dividends in the two years of Mr. Richmond's and Mr. Keep's control were 6 per cent. In 1871, when we were paying on a larger capital, the average rate per ton per mile was 1.49 cents. The difference between that and 3.26, which is more than double, or 2.87, which is very nearly double, involves between nine and ten millions of dollars a year, and would have made the dividends very large, as such difference would have been all gain.

Mr. DAVIS. What were your gross receipts in those two years?

Mr. WORCESTER. I have not that with me in writing just now, but I can tell you pretty nearly. About fifteen or sixteen millions of dollars.

Mr. DAVIS. In each of the two years?

Mr. WORCESTER. Yes, sir; somewhere about that, approximately.

Mr. DAVIS. And the change would have involved nine or ten millions?

Mr. WORCESTER. Yes, sir. You will observe that the rates are more than double in one case, and nearly double in the other. I speak within bounds. I say fifteen or sixteen millions of dollars of aggregate earnings. Nearly \$9,000,000 was freight in 1865, the year the rates were more than double. The next year freight was nearly \$10,000,000, and the rates nearly double. The ability to pay 8 per cent., as is done now, is not due to the rates received, but is due to the economy with which the road is worked.

The CHAIRMAN. There is a largely increased business, is there not?

Mr. WORCESTER. Yes, sir; and the increased business is due very largely to that very process of decreasing rates.

Mr. DAVIS. Have you changed your system of keeping accounts in the mean time?

Mr. WORCESTER. Not the slightest. I had personal and exclusive charge of them from 1853 until within a year, for many years keeping the general accounts with my own hands. There has never been any change whatever in regard to them. It has always been a question for sober consideration what amounts have been expended for things that fairly and actually constitute permanent improvement, and these have always had plain business justice in adjusting accounts. No small part of the profit in a prosperous road is due to the personal power or ability of a man, or of some few men, to accomplish certain things; I mean, now, things that few men can accomplish. I know cases in which thousands of dollars have been saved by the mere ability to say "we will" or "we will not" do so and so in a way that saved instead of provoked controversy. This personal power is what saves contributions to others to preserve yourself; what saves all "blackmailing," of which, in one way or another, there is very much enforced against such as have not the power I speak of, and it certainly is individual property.

There is a fact in the history of the railroad system of the country that is well worth considering in connection with the subject of expanded capital, and the payment of dividends thereon, a fact that I have never heard mentioned in the discussions upon that subject. I mean the extinction of capital caused by the foreclosure of mortgages. There are few roads that have not, at some time, had capital stock, and part of, or all, debt cut off by this process. Roads with capital stock representing merely mortgage bonds form the rule rather than the exception. Foreclosure of the third mortgage, then of the second, and then of the first, was a common experience, in each case all subordinate claims being extinguished. With few exceptions, the whole system passed through this condensing process, and I make the assertion with confidence that the utmost expansion for prosperity is far short of the

contraction caused by the adversity that was incidental to such process. There is one case connected with the New York Central Road that I will speak of by way of illustration. We operate a line from Canandaigua to Niagara Falls. It was originally called the Canandaigua and Niagara Falls Road. It was built at a cost of \$3,500,000. Its capital stock and funded debt at a certain time were \$3,000,000, the balance of the cost being unsecured debt. In 1855 we had in this State a board of railroad commissioners. They were clothed with certain discretionary powers in respect of asking information, and they asked, among other things, for an estimate of the value of the various roads in the State; such estimate to be made especially with reference to their call, and to be irrespective of anything relating to cost, either by money actually spent or the amount of capital nominally representing cost.

Mr. DAVIS. Was that for purposes of taxation?

Mr. WORCESTER. No, sir. It was for more general and statistical information. It was done for two years. The estimated value of the road I spoke of, made for the purpose referred to, was \$3,307,000; so that on either of the three bases, of money actually expended, nominal cost as shown by capital, or estimated actual value of the property, there was an investment of nearly three million and a half, and there were one hundred and seven miles of road. There was a first mortgage for \$1,000,000 which was foreclosed and everything else was cut off. A company was organized by the holders of the bonds secured by this mortgage, with a capital stock of a million, and the road was then leased to the New York Central. Under the lease we pay 6 per cent. on \$1,000,000, making \$60,000 per year on an original investment of \$3,500,000. This case is an illustration of many, very many others.

I have often inquired in my own mind why 10 per cent. has been so often assumed as a maximum, or even a fair return to be made for capital invested in railroads. It is a question that I have never been able to answer, nor have I heard any one else answer it. I saw a newspaper proposition some time ago to have the Government promote the building a great through line, and 12 per cent. was spoken of, but for some reason 10 per cent. is usually named, almost as a matter of course. There is a thing about the Central that I desire to call attention to in this connection. It is something which has not been heretofore stated at all, although it was a computation made some time ago, and is worth putting on record. For a number of years the Central, as I have already said, paid 8 per cent. for a part of the time, but for the larger part 6 per cent. on a certain capital stock, which capital stock, added to its funded debt, bearing but little over 6 per cent. interest, was less than the road actually cost, for there had been some considerable expenditure of revenue on the road which was not represented by stock or debt. From 1853 down to 1869, take the amount of dividends paid and add interest on debt, and the amount will be largely, very largely less than 10 per cent. on the cost of the road. On the amounts that were each year deficient, from 10 per cent. on the cost of the road compute interest down to 1869, when the road commenced paying somewhat more than 10 per cent. on its cost, and there would be shown a certain amount of arrearages. Well, in 1869 the road commenced paying, as I have said, somewhat more than 10 per cent. on its cost, and perhaps it may be said that by and by the arrearages I mentioned will have been paid, so that thereafter the result will be more than equal to a 10 per cent. return. So far from this being true, however, the real condition is that *the present excess over 10 per cent. on actual cost hardly pays*

the interest on the arrearages I described, and will never extinguish any part of the principal.

It is somewhat peculiar that railroads are held to a sort of present moral accounting, without regard to the circumstances of their previous history or experience. Roads that have had a precarious existence for years—that have paid very small dividends, or none at all—are indicted, so to speak, as soon as any benefit is reached. The Hudson River and the old Michigan Southern roads are examples of this treatment. I have not had an opportunity to compute the result to the present of those years when they respectively paid nothing to those who had invested money in them, in a manner similar to the computation made for the low dividends on Central, but I am confident that quite as peculiar a result would be shown.

Mr. SHERMAN. What is the actual stock of your road now?

Mr. WORCESTER. About eighty-nine and a half million.

Mr. SHERMAN. The funded debt is how much?

Mr. WORCESTER. About sixteen and a half million.

Mr. SHERMAN. The two sums together would make the money in the road?

Mr. WORCESTER. The funded debt does not in every case enter into cost of road. A part of our funded debt, for instance, represents investments other than the road, from which revenue is derived sufficient to take care of the interest on that part of the debt.

Mr. SHERMAN. It would be property?

Mr. WORCESTER. Yes, sir; but property not included in what I should state to be the cost of the road.

Mr. SHERMAN. You have other property beside road-bed and road?

Mr. WORCESTER. Yes, sir. We have two very expensive bridges across the Hudson at Albany, and various other things which are not included in the cost of the road, or in such cost as stated in our reports or tabulations therefrom. These are assets other than the road.

Mr. NORWOOD. How is that stock made up? It is not the original capital stock of the company, of course; it has been increased from time to time?

Mr. WORCESTER. The present capital stock was made when the New York Central and the Hudson River Companies consolidated. It was made by the combined companies.

Mr. DAVIS. When did that consolidation take place?

Mr. WORCESTER. In November, 1869.

Mr. NORWOOD. In all your remarks, then, to-day, when you speak of the New York Central, you include the Hudson?

Mr. WORCESTER. In all references previous to 1869, I meant usually the New York Central alone; in all cases since 1869, usually the consolidated New York Central and Hudson River.

Mr. CONKLING. For the information of other members of the committee, I will state, and if correct you will confirm it, that originally the New York Central Railway consisted of numerous roads, the Albany and Schenectady, the Utica and Schenectady, the Syracuse and Utica, the Rochester and Syracuse, the Buffalo and Rochester, and others, I think. In 1853 a consolidation of all these roads took place, which aggregated the capital stock they had represented. Thus it stood until 1869, when the New York Central Railway, as an entirety, made up of these original roads, and the Hudson River Railroad were consolidated, and that last consolidation represents now the entire road as one.

Mr. SHERMAN. There is one thing further I do not understand. I see that in 1863, long after the whole road had been consolidated from

Albany to Buffalo, the capital stock was \$28,631,000, and that now it is \$89,000,000. Is that caused by stock certificates, or stock dividends?

Mr. CONKLING. It is caused most largely by the consolidation since with the Hudson River Road, which takes in the whole capital of that road, that being in 1869, you know, six years subsequent to 1863, when the road west of the Hudson reached but twenty-three million. The great item is the addition of the Hudson River Road.

(To Mr. WORCESTER.) Please state how the stock was filled up to the eighty-nine million. You began in 1863 with twenty-eight million west of the Hudson; you had sixteen or seventeen million represented by the Hudson; those two do not make the eighty-nine million. Will you state the way in which the residue was filled up?

Mr. WORCESTER. The capital stock of the two companies at the time of the consolidation consisted of about \$45,000,000. There was an issue of 80 per cent. in "interest certificates" on the Central.

Mr. NORWOOD. That was in 1869?

Mr. WORCESTER. No, sir; that was in 1868; an issue of 80 per cent. in "interest certificates" on New York Central. The capital-stock was then fixed at ninety millions of dollars for the new consolidated company, and that was divided between the stockholders in the New York Central and those in the Hudson River, in proportion to their respective holdings; and in doing this the 80 per cent. in "interest certificates" issued on New York Central were absorbed.

Mr. NORWOOD. Eighty per cent. of the New York Central would be less than \$14,000,000?

Mr. DAVIS. O, no; it would be considerably over \$14,000,000.

Mr. WORCESTER. It would be over \$23,000,000, the capital stock of the New York Central proper then being about \$29,000,000.

Mr. NORWOOD. That still does not make up the \$90,000,000, and the object of my question was to know upon what the increased estimate of the consolidated stock was based.

Mr. WORCESTER. I stated already that when the arrangement was made for consolidation the capital stock of the new company was fixed at \$90,000,000.

Mr. NORWOOD. I understand that; but the stock of the New York Central was \$28,000,000, the dividend was 80 per cent., made before the consolidation. The Hudson River then was \$16,000,000 in round numbers; say \$45,000,000, with the 80 per cent. of the New York Central to be added, making \$68,000,000. Now, upon what was the increased amount of the stock between \$68,000,000 and \$90,000,000 based? Why did they fix it at that amount? Was it arbitrary?

Mr. WORCESTER. It was simply a matter of agreement and arrangement in making the basis for the organization of the new consolidated company. The capital stock of the new company was fixed at \$90,000,000. The outstanding obligation in capital stock and "interest certificates" at that time amounted to what you have stated. The capital stock of the new company having been fixed at the amount named, that amount was apportioned among those who held the New York Central stock, the Hudson River stock, and the New York Central "interest certificates" respectively. There were two properties and interests to be combined. This combination had grown to be an absolute necessity, as will be thoroughly and feelingly understood by all who are familiar with the "break of connection" at Albany early in 1867, when adverse interests controlled the respective lines, a thing that the public, even more than the roads, were to be benefited by the non-recurrence of, and this fixing of the amount of capital stock was one of the details to settle in arranging for combination. This arrangement did not necessarily in-

volve paying a dividend on the whole of it, or, if paid on the whole, at any particular rate. It was only an amount fixed by the agreement for consolidation. To a certain extent it may be called arbitrary. Whatever net revenue the new company might have would have to be applied to the new amount of capital stock, and it has never affected, one way or the other, the amount of such net revenue. If the amount of the capital stock had been made different, it would have affected the *rate* of dividends, but not all the aggregate *amount* paid therefor.

Mr. CONKLING. The question, as I understand it, that the committee wants answered is, what, when you came to issue stock, represented the difference between \$68,000,000, of which the previous roads made up the component parts, and the total of \$89,000,000, which, in point of fact, you did issue, and which is now held as stock?

Mr. WORCESTER. Will you please restate that?

Mr. CONKLING. I mean this: Here is a difference between \$68,000,000 of stock in fact as it was, and \$89,000,000 of stock in fact as it is. Do you mean that that is a sheer vacuum, a mere arbitrary *ipse dixit*, or do you mean that that difference is represented by some element of cost or increment of value which entered into the consolidation?

Mr. WORCESTER. The law says that any consolidated company formed under it shall fix the amount of its capital stock. The amount in this case was fixed at \$90,000,000 by the consolidation agreement. The market value of the respective stocks had some influence in deciding what amount should be fixed for the new company. This \$90,000,000 represented approximately the market-value of the aggregate volume of stock.

Mr. CONKLING. If I do not interrupt you, was that market-value largely above par?

Mr. WORCESTER. It was far above par at that time. The market-value of the old stocks amounted approximately to the amount at which the new capital stock was made. There was some question about the ability of the road, even by economical and skillful management, to pay a reasonable dividend, say 7 or 8 per cent., on the amount of the new capital stock; but, as to that, it had to take its chance; it was, after all, but a question of a smaller rate on a larger amount, as against a larger rate on a smaller amount; the relative change of two factors having in view the same product in each case, for in either case the net revenue of the road would have been just the same.

Mr. CONKLING. So \$89,000,000 represented, first, the selling value, and secondly, the earning value of the stocks?

Mr. WORCESTER. Substantially so.

Mr. NORWOOD. One more question, if you please. Did you estimate the value of the two roads consolidated at \$89,000,000 as property on the market, or was it what the roads had actually expended?

Mr. SHERMAN. They estimated the value of the property at \$89,000,000 over and above its debt.

Mr. NORWOOD. Did you estimate simply the value of the stock in the market, or did you estimate the value of the road over and above your debt?

Mr. WORCESTER. This amount was somewhat more than the money which had been actually expended on the road. The amount put down in the table you have is \$63,000,000. There had been, however, some eight or ten millions additional to that expended from revenue, which was one of the reasons why the stocks stood so high in market; this expenditure had given so much more earning capacity. There was, however, no strict reference to the cost of the road in fixing that amount. That was done partly with reference to the two considerations that I

have mentioned, and partly as a means of adjusting *relative* values so as to accomplish consolidation.

The next subdivision that the committee have made is facts in relation to the consolidation of railroads in the States, either by purchase or otherwise, and the effects which such consolidations have had upon the cost of transportation.

In 1852 there were seventeen railroad companies constituting the line from New York to Chicago. There were eighteen from Boston to Chicago.

Mr. DAVIS. Constituting all lines, or one line?

Mr. WORCESTER. Substantially one by what are now the New York Central and Lake Shore Roads. Some of these had been formed by previous consolidations of still smaller companies. In 1853 the New York Central was formed by the consolidation of ten companies, making a single company, with its line reaching from Albany to Buffalo. The various companies that composed the line from Buffalo to Chicago, that is the American line, were consolidated subsequently, as were also two lines between Albany and Boston. To-day there are but two companies in the line from New York to Chicago, and three in that from Boston to Chicago.

All the permanent and progressive reduction of rates that I have spoken of, and the whole practical efficiency of the entire railroad system, has been due entirely to consolidation or to the concentrated control of lines originally. If there is anything that is still especially needed, it is further consolidation. We had ten roads between Albany and Buffalo. There was just about as much efficiency in operating ten roads as there would be in ten men trying to do a thing that one ought to do. Each board of directors had its own say and its own local interest; each company had its own profit to make and its own schemes to advance. There was no obligation on the part of any one company to do anything for any other. Through lines of cars could be run only by very complicated and embarrassing arrangements. I can remember the time when conductors were changed at the end of each one of the roads of the old line between Buffalo and Albany. In some cases a ticket could not be bought through from Albany to Buffalo. The elements of usefulness and economy were very few. In regard to freight, there was no obligation on the part of any one of the roads to take a single pound of it from another. Except so far as they might choose to agree with each other, it involved changing at each terminus. The policy of consolidation was what first led to the prorating of freight charges. They are now prorated where the old number of lines could never have been got into any agreement. Other countries, too, have been carrying on this system of consolidation. All the railroads in France have been combined into four systems. In England substantially all the railroads have been absorbed into five or six general systems. The London and Northwestern, the great railroad of the country, absorbed nearly all the lines with which it connected, until it got to be an enormous concern, and yet, within a very short time, it has combined with the Lancashire and Yorkshire, which puts pretty nearly all the roads in the upper part of England under one general control.

If there is any principle involved in having no railroad in single control exceed, say, one hundred miles in length, the same general rule might just as well limit to a single mile. The objection that is frequently strongly urged against consolidation is the so-called great power created. There seems to be a frightful idea that any power that may be exercised for good will certainly be exercised for evil. In limiting the simple exercise of power so as to surely insure against the possibility of doing

evil, it is very easy to defeat the ability to do good. What is the really proper course to take when an absolute advantage is considered as against a remote contingency of disadvantage, or as against mere possibility, is quite easy to determine. In ordinary matters there is never any difficulty.

That consolidation has, in all its general effects, been beneficial, as well to the public as to the railroads, seems to me to be entirely without question. There is, however, no good reason for supposing that consolidation does really increase power. For all the purposes of practical power to accomplish the terrible purposes so much feared, there would be a great deal more ability in the separate companies than in the combined company. The combined company is, at least, answerable as a unit, and the absence of moral responsibility that is supposed to exist, because by reason of an aggregation of parties it is so divided that no one, as it is said, is responsible, would be vastly increased if such unit were divided into the fractions from which it was formed. Each fraction, in this case, would have the full effect of the whole unit.

The effect of direct personal influence or of association with individuals by the managers would be a great deal less in the consolidated company than in the separate companies, for in this case again each would have as much effect as the whole. Experience has shown this to be so. This power, of which so much is said, is alleged to be exercised on legislators, on judges, on common councils, and on coroners, and one would sometimes be almost led to suppose that our legislatures and our courts were utterly devoid of integrity. As representative and experienced men, you, gentlemen, can be competent witnesses upon this point.

I have often asked to have pointed out any railroad law of New York passed during the past twenty years that can be called favorable to the railroads at the expense of the public, and have never found any person who could do it, and for the best reason in the world. There is sometimes an idea that a grant of the simple right to form a corporation is conferring such a great favor that thereafter it is justifiable to impose all sorts of conditions on what are called these creatures of our creation. I could say to my boy that he must not go out of the house without asking my permission. It would be perfectly proper, for obvious reasons, that I should reserve that condition. But when my boy asks me if he may go out, and I tell him yes, that that puts him under an obligation to me of a kind that I should make conditions with him for granting his request is not at all evident. There are a great many things that either State or national authorities do at the request of railroad companies that are simple grants of power for promoting efficiency of public service, and in which there is nothing that takes anything from the people, and which form no ground whatever for obligations.

One illustration as to the influence that can be used with common councils. We wanted to make an improvement in a certain city; one that would cost nearly a million dollars. It was one that would not bring a single penny back to the road, for it would not produce any additional business. It included the erection of a commodious depot-building—and to digress a moment, let me say that this making railroad companies rich by building depots is an utter fallacy. Take the Grand Central depot here for instance. There has been a great deal of comment because the company has been permitted to cut off some parts of streets, it being conveniently assumed that the depot was entirely for the benefit of the company, and the source of great revenue to it—one of the properties that make its so-called riches. The depot, with the cost of the ground, cost a number of millions of dollars; the annual cost of maintaining the building, with the surroundings and the

superintendence, amount to a sum which, if capitalized, would represent millions more; for all of which we have the privilege of paying taxes and insurance, and that is all. We own the property, but the public has the use of it. We have no additional revenue because of it, and we have to pay the particular expenses that such an establishment necessarily involves.

The improvement I was speaking of involved the bridging and partial obstruction of some street-crossings, and while in an almost similar case for an individual there was little objection to the needed municipal action, in our case it became necessary to see personally each member of the council, a service which I myself performed, and after all the explanations that could be given, it was with the greatest difficulty that consent could be procured, and it was extremely doubtful at one time if it could be procured at all. All this was because it was said to be for the railroad company. And if in a case in which the benefit was so entirely on the other side the chances were so slender, what can be done in other cases can be easily understood.

The indisposition and even aversion there is in municipalities to do things that are really for their own benefit, if a railroad happens to be incidentally a party to it, is unaccountable. This spirit is what interferes so much with arrangements of terminal facilities. There has always been great difficulty in getting approaches to points where depot and freight conveniences would benefit the public. The question is often asked, "Why don't you build elevators in New York?" "Why don't you have freight-houses fronting on the water at the foot of such or such a street?" And, by the way, almost every person who asks these questions thinks that he can point out the exact spot where these things should be located. The very minute, however, any movement is made, the cry of "railroad" is raised, with all its accompanying embarrassments.

Mr. SHERMAN. Is there no elevator here now?

Mr. WORCESTER. No, sir; at least not of the kind used elsewhere. About a year ago Mr. Vanderbilt put me in charge of some negotiations with a view to building elevators. The embarrassments are, however, very great. Capitalists seem disinclined to take a part in such an enterprise.

Mr. SHERMAN. New York capitalists build them all over the West, at Milwaukee, Chicago, &c.

Mr. WORCESTER. But you cannot get them to build here.

The CHAIRMAN. Why not?

Mr. WORCESTER. It would be difficult to name the reasons. They would perhaps build if they could be guaranteed all the business of certain parties. They do not seem inclined to do as those do who build railroads—take their chances of procuring business. They want guarantees in advance from those who control business, as they sometimes think.

Mr. SHERMAN. That is, guarantees from the railroads?

Mr. WORCESTER. Yes, sir; but it is hardly possible for a railroad to give such guarantees. The consignor or the consignee might not permit them to be fulfilled. What is wanted, practically, as I understand it, is that the railroads, by some artificial means of charges or some process of commercial force, should compel this result.

Mr. NORWOOD. Taking the statement of Mr. Hayes yesterday about the expense of transfer in New York, would not the interest of the parties themselves be a sufficient guarantee that these elevators would be used?

Mr. WORCESTER. It would probably be so to a considerable extent,

but it would not be so certainly under all circumstances. It is the intention, however, of the New York Central and Hudson River Company, in the absence of other arrangements, itself to provide for these wants, if no insurmountable obstacles are thrown in its way. The approaches to elevators or other facilities must necessarily inconvenience some individuals; and while the general commercial interests of the city says, "Let us have these things by all means," the particular individuals directly, and perhaps injuriously, affected, either object or want modifications of plans that tend to embarrass, and perhaps eventually to defeat the scheme. I would say here, lest I should omit it, that the New York Central is now building at the foot of Thirty-third street, not exactly an elevator, but a series of "pockets," very much like those sometimes used for coal. They will, when completed, hold nearly 100,000 bushels of grain. The loaded cars will be run up an incline over the "pockets," and the grain dropped in, very much as coal is dropped. The "pockets" can be discharged into vessels coming alongside. They have in the West at small stations "grain-houses," where loaded wagons are hauled up over the cars and grain transferred, and this plan is somewhat the same, substituting cars for wagons.

In view of the comments that are just at this time so freely made about railroads not furnishing elevators and such like accessories to business, it is interesting, very interesting, to consider the points that have heretofore been raised as to their legal power to do such things.

It will be remembered that the so-called power caused by aggregation of property in the ownership of railroads is, to many, the great thing to be feared, and means are soberly suggested which it is hoped may save the realization of their fears. At the same time, with somewhat doubtful consistency, there is a demand made upon the roads to build structures that involve the expenditure of much money; more than any companies, other than large and powerful ones, could command; and, in fact, to do the very things, the doing of which heretofore has been made the occasion of much of the discussion now going on.

I shall take occasion further on to say something upon the general question of this power. I have referred to it now only as it bears upon the particular matter under consideration.

To show how points have been raised against the legal power of railroads to manage elevators, let me relate some experience.

The New York Central road owned a large elevator at Buffalo, situated on Buffalo Creek or Harbor, which received grain coming across the lake. At the time we were running propellers ourselves they discharged into this elevator. The grain that was put in that elevator had not always a designated means of coming east. Sometimes it would come by canal and sometimes by rail. Although when the grain was put in we naturally hoped that it might come east by rail—the elevator being owned as an appendage or accessory to, and primarily for the purpose of getting grain business on, the road—the point was made that, so far as grain was taken away by canal, the railroad company was not legally warranted in operating an elevator. A bill was actually introduced into the New York legislature restricting railroads from owning elevators at all, so as to settle this point definitely.

MR. CONKLING. It did not pass?

MR. WORCESTER. No, sir; but we had to take no small pains to prevent its becoming a law, and this was not encouraging to us. I have been told, within a week, that there are parties who propose to test the question of whether a railroad company can build elevators here in New York. As land for a site or for approaches would, no doubt, have to be partly procured by condemnation, a disposition to make these

tests does not help the enterprise certainly. An adverse decision would give additional occasion for complaints of the kind already made. These things are very, very embarrassing. It is "You shall not do," and then, "Why do you not do?" When I think of them, I sometimes call to mind what was said upon another subject, but is fully applicable to this:

"You shall and you shan't,
You will and you won't;
You'll be damned if you do,
And be damned if you don't."

Mr. SHERMAN. What is the objection to capitalists building those, and you making a contract with them that all the wheat that goes over your road, so far as possible, you give them? They have them on all the terminal roads in Chicago.

Mr. WORCESTER. That might be the cause for more complaints of the exercise of the power in controlling business; it might involve an exhaustive contract with one party, and, when unable to make other similar ones, be made the ground of charges of discrimination. Aside from these considerations, it would depend on what the probabilities were for the future, as to rates, &c. We might find after a time that we were held responsible under the contract for effects caused by an entirely changed condition of affairs, and yet perhaps we could not get out of it. Such a contract would necessarily have to be very strong.

Mr. NORWOOD. Could you control the freight?

Mr. WORCESTER. I spoke of the difficulties attending that a little while ago. The parties would probably want an absolute guarantee that the railroads would put a certain amount of freight in the structures.

Mr. SHERMAN. All the grain brought here by vessel comes through your canal; all that comes through lake vessels does not come in bulk to the individual owner. A man gets not the same wheat, so that it is only that which comes by rail that can come in separate parts.

Mr. WORCESTER. We bring some grain clear through to New York by rail, and some we bring by rail to Athens, on the west side of the Hudson, about twenty-eight miles, by the river, this side of Albany, thence by water to New York; this latter way being, of course, confined to the season of navigation. Lots are, however, in all cases kept separate. One of the difficulties, and perhaps the greatest, in arranging any new plan for this business in New York, is the fact that the system of "grading," so universal elsewhere, has not yet been adopted as a commercial practice here. There are many interests that actively oppose it. Much money is invested in works adapted to the existing custom, and, however much the business of a corporate aggregation of individuals is expected to be done on the *pro bono publico* principle, for that of an aggregation of individuals not incorporated, exemption is claimed. "What's yours is mine, and what's mine is my own." Aside from absolutely adverse interests, it is not easy to change established commercial customs. There must be an appreciation of benefit by the change, and this comes only by time. It is not always, either, that one person having a full appreciation of the benefit to be derived from a change is able to convey the same power to his associate. I did not hear Mr. Hayes's remarks on this subject of "grading" grain, but as he is perfectly familiar with all its bearings on transportation matters, they must have thrown much light on it.

Mr. Hayes being the manager of one of the co-operative lines running over our road, reminds me that when speaking of these lines I referred several times to what I said about them when this committee was inquir-

ing into the postal-car matter; and having now before me a printed copy of my remarks, I will read from it the part relating to these lines:

The CHAIRMAN. * * * I should like to ask you whether there are any of those fast-freight lines running over your road or not. Say, for instance, the Star Union line, the Red line, or the Blue line, or however you distinguish them.

Mr. WORCESTER. Yes, sir; we have a number of them. We have the "Red" line, the "White" line, and the "Blue" line. We have a line that was called the "Green" line, but it does not amount to much. There is also the "International" line, and the "Merchants' Dispatch Transportation Company."

The CHAIRMAN. Are they owned by the stockholders of your company?

Mr. WORCESTER. No, sir; they are owned by the company itself, in connection with other companies. They are not outside organizations, except in form. The respective companies who form a line agree to set apart a certain number of their cars to be used exclusively in the line. The ownership of each car remains specific. It does not become an undivided interest. We own absolutely, just as we did before, so many cars, and can withdraw them from the line, providing we break up the arrangement. They are simply put into a common service. Transportation is done in precisely the same manner as if done in common cars in the old way. The only organization about such a line is that it has an office where the movements of the car are kept account of and controlled, so as to add force and unity to the combination in transacting business, and in that office certain expenses are paid, such as loss, and damage, and overcharges, and the correction of way-bills, and some details connected therewith are attended to, all being done for the common benefit of all the companies interested.

The CHAIRMAN. Are they run by contract over the road?

Mr. WORCESTER. No, sir; The rates are those established by the companies, and are just the same as for business done otherwise. There is nothing special about them, except the appropriation or assignment of a company's cars to that especial service in combination with cars of the other companies forming the line.

Mr. CONKLING. It is the running of its own by each company in connection with other companies?

Mr. WORCESTER. Yes, sir. The agent who has charge of a line represents all the companies instead of one. If we should let a car go to Chicago, for instance, outside of one of these lines, the roads their might run it in there own trains, as there would be nobody there to look especially after it. But as the agent of a line is in fact the agent of all the companies forming it, he would see that a car was put back into its regular service, and that it came home again, or that we were paid for the use of it. The whole arrangement is one for efficiency and economy. Time and expense are saved by avoiding transfers where one road connects with another. The rates charged the public for transportation have been growing less each year for several years past, owing to the operations of these lines. They are a voluntary arrangement, so far as the roads are concerned, as all arrangements that run the cars of one company over the road of another must necessarily be, for there is no power that I know of that can compel a company to operate beyond its own proper road.

As exhibiting at once the power of a railroad company, and the encouragement that is given to create the increased facilities, about which there is so much urgency, look at the new tracks now being laid by the New York Central Company.

You are no doubt aware that that company is constructing two additional tracks between Albany and Buffalo, which, when completed, will make a quadruple-tracked line. The magnitude of such a work naturally demanded much careful and even anxious thought before the general proposition that it should be undertaken could be agreed upon. Immediately following the settlement of that came one particular question after another. With the experience that there is a strange and almost universally prevailing disposition to hold railroad companies to the strictest construction of law, every point that could be raised had to be considered and decided. The first question that arose was, whether the company had a right to put down four tracks. The law, speaking of railroad companies, says that they may lay out their road-bed not exceeding six rods wide and may construct their road thereon.

Mr. SHERMAN. Double or single track, I suppose?

Mr. WORCESTER. It does not say about that. That was the peculiarity. Some said a double track road was a complete railroad, and exhausted the power, while others said as many tracks could be laid as the six

rods in width would permit. We had not, however, originally taken the full width of six rails in some cases, and the question arose whether, having once exercised our power to take land, and not having taken the maximum amount that the law authorized, we could take again. Did it not mean one exercise of the power; and once used, was it not exhausted? These things show how much carefulness and anxiety there is connected with any new project. It was finally thought there would be no difficulty in the respects I have spoken of, but then came another question. It was considered very desirable to straighten curves at certain points, and possibly to go around some of the cities, where it would be difficult, and perhaps impossible, to run additional tracts through, and where the local demand was for a divergence. At Schenectady there is a sort of triangle of roads. We run northwest and southwest, and there was quite a desirable line to connect them. At Syracuse it was absolutely impossible to get additional tracks under the canal and through the city at all. It was thought it might be advantageous to go around instead of through Rochester with the heavy through freight and various other things of that kind. In view of all the circumstances, and to avoid all risk as to these questions, and, more than all, for the dignity of the enterprise—a matter in which the public should have felt as much interest as the company could feel—so that the work might, beyond question, be done under conferred authority instead of by assuming what might be claimed to be doubtful powers, we went to our legislature and asked for permission to construct the two new tracks—permission to expend a large sum of money for a great public improvement—but *we did not get it*. We have, consequently, been compelled to go on and manage as best we could, and under great disadvantages. We had to organize a new and special company to build around Syracuse. It may be doubtful whether, under existing laws, we shall not be compelled to operate this few miles under a separate organization. The State then has to deal with and keeps its records of another complete railroad, for this link would have to have as much legal railroad in it as if it ran through the entire State. This facilitates the transaction of business with a vengeance.

Mr. SHERMAN. Was there an objection to the passage of the bill, or was it simply for the want of time?

Mr. WORCESTER. Every legitimate effort was made to pass it, but it could not be passed by legitimate means. It was not, in the slightest degree, a question of time. It was introduced early, and the session was unusually long. I state the exact truth when I say that the bill could not be passed. The most bitter comments were made upon the company, upon the bill, and upon everything connected with it. Opposition was made to it by some on the ground of the additional influence and power it might confer on the company, the dread of which was anxiously expressed. The bill, as at first drawn, might, it was urged, allow an entire line to be constructed. It was said the company might build such a line from New York to Buffalo. That would be a terrible thing, indeed.

There might, perhaps, be another complete line of railroad communication between those places. If it had been the intention to do that, there was no reason why a new company for the purpose should not have been formed under the general railroad law instead of making the application that was made; but that consideration did not have any effect, and to prevent the possibility of such a disastrous thing the bill was amended so as to make the points of divergence and convergence not more than twenty miles apart. But the bill did not pass. The desire of the managers of the Central to have the new tracks part and

parcel of their road, as a matter of their own pride, and not less for pride of State enterprise, and to have it made so by express legislative authority, was very great. It was a remarkable instance of respect for and deference to the law-making power, this dignified application for authority was. The result, however, was not such as to encourage similar applications hereafter.

I will take advantage of this occasion to say something about these two additional tracks exclusively for freight. There will be graded this year two hundred miles out of the three hundred between Albany and Buffalo. There will be, we hope, about one hundred and fifty miles of double track laid ready for operation before work ceases this fall. Within one year from the time the project was definitely agreed upon, the money will have been raised, the plans all matured, the engineers' estimates made, the right of way acquired, the rails and ties procured, contracts made for the grading; two hundred miles of grading done, and one hundred and fifty miles of the rails laid. It is to be steel; 65 pounds to the yard, uniformly.

Mr. CONKLING. And when done are two of these four tracks to be devoted to freight exclusively?

Mr. WORCESTER. Yes, sir; but the new tracks are not necessarily exclusively for freight; they are sometimes both on one side the old tracks, and sometimes both on the other; sometimes one is on one side and one is on the other. When the two new tracks are completed the whole system will be re-arranged, so that two tracks of the four that will exist will be for freight and two for passengers. It will not be in every case, however, that either the old two or new two will be used for either kind of business.

Mr. DAVIS. Have you the estimate for the whole cost?

Mr. WORCESTER. We have made no close estimate. It was decided to do the work, and to do it as economically as possible; that was all. There were approximate estimates. The probable cost of the gradings was pretty closely ascertained when the contracts were made; the cost of the superstructure is somewhat definite. There are, however, many items of expenses which are unknown, and which will affect the aggregate cost very much. They are the surroundings or accessories, and the conveniences we shall put here and there. We shall be compelled to re-arrange buildings, shops, sidings, &c., all of which are left for consideration after the track-work is done; and of the cost of these there has been no estimate made.

Mr. DAVIS. Can you approximate to the gross amount?

Mr. WORCESTER. We shall probably spend on the work some \$20,000,000. The profit in saving that will be derived from the present volume of business will not pay the interest on the additional capital involved. It is not at present a speculation, by any means.

Mr. DAVIS. Do you issue new stock to pay for that?

Mr. WORCESTER. We borrow the money on bonds. We have borrowed already £2,000,000 sterling in London.

Mr. CONKLING. Taking the increase of business on your road for the last five years, how long will it be before the utmost capacity of the four tracks will be needed?

Mr. WORCESTER. That would be a little difficult to say. The practical capacity of a double-track road exclusively for freight is not yet fully ascertained. The theoretical capacity of such a line could be very easily stated, but the practical capacity depends on things that do not pertain entirely to the road itself. The theoretical capacity of a road might, in a general way, be said to be trains following each other at certain inter-

vals uniformly during the twenty-four hours. That capacity could be very easily computed.

Mr. CONKLING. What is your understanding of that?

Mr. WORCESTER. The capacity of a road of that kind would be, I should say, enough to move 10,000,000 tons a year. I mean move and deliver or discharge that tonnage, taking the probable chances of blocks and accumulations. In other words, a road of that kind could be worked efficiently and effectively to that extent, when provided with the proper amount of equipment.

Mr. CONKLING. That would be trains running how often each way?

Mr. WORCESTER. About one hundred trains a day of twenty-five cars to a train.

Mr. CONKLING. How many cars a day.

Mr. WORCESTER. Two thousand five hundred cars. This estimate of tonnage is founded on what would be the actual freight in both directions. In round numbers we could send 2,500 cars from New York to Buffalo, and 2,500 cars from Buffalo to New York, but the cars going west could not run full loaded, and so the tonnage would, under any circumstances, fall below what the simple ability to move cars would indicate.

The sixth subdivision made by the committee has reference to the control of canals by railroad companies, as to which the companies I represent have had no experience. The canals in the State of New York are controlled by the State.

The seventh subdivision is as to the economy of railroads, to be operated exclusively as freight lines; and the eighth is the relative economy of fast and slow freight lines, with a view to ascertaining the speed of maximum profits for freight lines.

When the committee gave notice that information would be asked for from railroad companies, I intended to prepare and present some carefully prepared statistics, comparative and otherwise, which would have had some considerable bearing upon these questions. And to make them more complete, I sent to England over two months ago for some elaborate figures about the railways there. I have been delaying the preparation of my own till those from England should come, but I have been disappointed as to their arrival. I shall be glad to prepare and furnish the committee any figures we may have that may convey any useful information. And I may at some future time send in statements embodying the results of the English statistics. And so, for the present, I will pass by these subdivisions.

Speaking of the English railways, reminds me to call attention to the spirit with which they are treated by the government of that country. In all matters of negotiation they are treated as equals—they are not embarrassed by the constructive obligations they are under. Because the government has created the corporation it does not say "This is my child, and I will strangle it if I wish."

I was speaking a little while ago of the assumption of 10 per cent. as the maximum profit that it was assumed railroads, when prosperous, should be permitted to make, and I hinted at the unfairness of low limitations when risks of making no profit were run, unless with such limitations there was the idea of a guaranty. Money in England is worth usually from 3 to 4 per cent., here from 7 to 12. And yet the English parliamentary reservation of the right to "revise" the rates of a railway company is applicable only when 10 per cent. is exceeded, and 10 per cent. there means a good deal. But more than that. I will read from an article upon this subject:

This clause refers to a right to revise the tariff of charges on all roads which are earn-

ing more than 10 per cent. net on their subscribed and paid-up capital. Such a right is secured to the government, and is only to be exercised after three months' notice, on the condition that the government shall guarantee the company whose rates are so revised the net profit of 10 per cent. a year. To secure the company against any abuse of this governmental privilege, it is also provided under this section that "such revised scale shall not be again revised, otherwise than with the consent of the company, for the period of twenty-one years."

Against this I will read the closing paragraph of an article in one of the most widely-circulated journals published in this city :

When the Central was borrowing money to pay 3 per cent. half-yearly, it seemed mean to tax it; but now, with a revenue of twenty-five million, Aristides himself might vote to confiscate. Idle to talk about measures being unconstitutional. Constitutions can be changed as well as laws, and when the day comes for the spoliation of the railways, neither vested rights nor common honesty are likely to obtain a hearing.

Of the logic of these paragraphs I will say nothing. You can judge of it. I beg, however, to call your especial attention to the spirit which pervades them.

The ninth subdivision is facts in relation to terminal charges, and upon this I shall be brief.

The expenses that attend the handling of property at a terminus or *entrepot*, which are in some cases made a charge upon the property, is something that the railroads have nothing to do with. The so-called terminal charges of railroads are not made the basis for additional rates on the property, they are simply considerations by which a through rate, already fixed upon the principles I have explained to you, may be divided between the respective parties in a line in a manner somewhat different from a prorating founded exclusively upon respective lengths of road. If a barrel of flour from Chicago to New York were, say, 80 cents, and that amount was to be divided in a certain ratio, the question would be whether there was any element that could constitute a fair claim on the part of one company to receive more than it otherwise would with a corresponding reduction in the amount the other roads in the line should receive. Terminal charges in railroading are simply claims for different bases of division that one road makes against another. These are adjusted sometimes by allowing what is called "constructive mileage." Suppose a line of, say, a hundred miles long has an undue proportion of the whole work to do, it might be permitted to call the length one hundred and ten or one hundred and fifteen miles as against the actual length of the others.

Where any road has an important delivering point, involving a large outlay, permanent and for conducting, when its length is but a small part of a through line, this adjustment in its favor is simply a process by which the other roads contribute to the expense of that point, that point being of as much importance to the other roads in the line as it is to the particular road that happens to end at or reach it. And these things do not affect at all the making of the rates.

If the opportunity had been afforded to prepare the statements of which I spoke a few minutes ago, they would have contained many facts that would have borne upon the inquiries suggested in the tenth, eleventh, and twelfth subdivisions. Most of the information upon them must necessarily be compilations or statistical matter. Although in the eleventh there is room for the exercise of judgment founded upon large practical experience in railroad management, still that would be the most intelligently exhibited by many and elaborate calculations and computations. A large item of expenses, for instance, is the fuel; and the relative economy of wood and coal, and of different kinds of coal,

having reference to nearness of location to some one kind, would, perhaps, be at once interesting and instructive.

Mr. DAVIS. What coal do you use generally?

Mr. WORCESTER. On the Hudson River line we use the Cumberland coal. On the middle and western parts of the line we use the Bloss coal, the Erie as we call it, and bituminous coal from various other places. It is all of the general nature of the Cumberland and Western Pennsylvania, bituminous, or rather semi-bituminous coal.

Mr. CONKLING. Are all your locomotives coal-burners.

Mr. WORCESTER. They are almost all. We do not renew wood-burners as they get used up, but we have a few left still.

Mr. SHERMAN. I should like fully to understand you about the capital in your road. We do not care how rich you are. We simply want to get at the elements of the cost of roads. We care nothing about your particular case, and have no desire to meddle in your matters at all, but simply to get the facts. You made a statement of the cost of the road and equipment at \$63,000,000. Is that the original cost of the road, or is it the amount at which the roads were estimated at the time of the consolidation?

Mr. WORCESTER. That represents something less than the actual cost of the roads, and not an estimated one. It is the original cost of the line when first opened, with the cost of the additions and extensions as they were made. There were many items paid out of earnings that were not included in the cost of the road, but were treated as repairs and the expenditure called expenses. The cost of the various roads in money actually spent on them down to the first consolidation, in 1853, was very considerably in excess of the aggregate capital stock and debt of the different companies at that time. The New York Central Company that was then formed assumed the aggregate capital stock and debt of the various companies that consolidated, and the cost of the road was *reduced* on the books of the new company to the amount of such aggregate.

Mr. SHERMAN. Were not some of the roads estimated in the consolidation at more than the cost of the stock?

Mr. WORCESTER. There was not any capital stock issued for that purpose. There was an obligation called debt certificates, which bore 6 per cent. interest.

Mr. CONKLING. Was that the case with the Troy and Schenectady road, for example?

Mr. WORCESTER. No, sir. That road paid in \$25 per share on its stock to entitle it to receive a similar amount in the new company.

(To Mr. SHERMAN.) These debt certificates were issued to adjust the value of one road as compared with another.

Mr. SHERMAN. Then let us go a little farther. In 1853 the cost of road and equipment included the amount of the premium bonds or debt certificates?

Mr. WORCESTER. No, sir; those certificates never were and are not now included in the items of the cost of the road, as shown on our books or in any published figures. The amount of those certificates was simply a premium to be paid by the company when or before the certificates matured, but it was not added to the cost of the road at all, and has had nothing to do with it.

Mr. SHERMAN. It was not included in the capital stock. Was it included in the cost of the road?

Mr. WORCESTER. No, sir; it was included in neither. There was no property representation on the books or in the accounts of the company

for those certificates. Their payment was and is contingent on the revenue of the road.

Mr. SHERMAN. How was the cost of the road made up—the actual amount paid to contractors for building?

Mr. WORCESTER. It was made up of the actual money expended on the road at first; but when the capital stock and the funded debt of the several companies that made the new company were put together, they amounted to *less than had been expended on the road by nearly \$2,000,000*, which was an amount from revenue that the old companies had, between them all, spent on their roads without its being represented in their capital stock and funded debt, and then the cost of road was adjusted by *reduction* to the amount of the capital stock and debt. We then issued these debt certificates, which are contingent promises to pay out of revenue, but they were not, and have never been, added to or treated as part of the cost of the road on our books or in any of our figures. The road had actually cost some \$2,000,000 more than we paid for it in stock and assumed debt in 1853.

Mr. SHERMAN. In 1863 the statement of cost of road and equipment represented the actual cost of the road except \$2,000,000?

Mr. WORCESTER. It represented the actual cost of the road excepting the \$2,000,000 I spoke of, and excepting also, an amount, which I cannot now state exactly, that we had expended on the property from revenue between 1853 and 1863, but had not charged as part of its value or cost. This was, in fact, improvements, enlargements or additions charged to expenses.

Mr. SHERMAN. The amount of the funded debt in 1863 was \$22,718,398, and the combined debt and stock of the company was then about \$50,000,000, say; now, was any stock sold for money after this time to be expended on the road?

Mr. WORCESTER. There was never any stock sold directly for money after 1853 or 1854; but this was done, we had issued convertible bonds and had spent the money derived from their sale on the roads. Some of these were converted, and of course increased the capital stock. This was practically selling capital stock for money, but with an intermediate process of issuing bonds.

Mr. SHERMAN. To what extent was that done?

Mr. WORCESTER. I cannot give you the exact amount without referring to our books. Other increases of capital stock were made in this way. We consolidated some other roads with ours before 1869. We took some into our system, taking a surrender of their capital stock and giving our own. One case was that of the "Athens" road, as it is called; we gave \$2,000,000 of our capital stock for the same amount of theirs. Their road became our road, and its cost then entered into the cost of ours.

Mr. SHERMAN. Up to what time had these consolidations taken place?

Mr. WORCESTER. The consolidation of the Athens road was made in 1867.

Mr. SHERMAN. What I should like to know is, what portion of your stock and certificates has been sold for money and applied to construction.

Mr. WORCESTER. To answer in a general way, all the stock and bonds after 1853. There never was a dollar of stock or bonds issued or sold except for money spent on the road. I have already explained as to the increases by consolidation, which do not affect the absolute correctness of this answer. I speak now of the time from the first consolidation, in 1853, down to the last consolidation, in 1869.

Mr. SHERMAN. How comes it that your stock account increased from

\$28,000,000, in 1863, to \$89,000,000, in 1873, unless you sold it for the purpose of building or buying roads?

Mr. WORCESTER. I cannot say how the table from which you take these figures is made up.

Mr. SHERMAN. The general statement is, that your stock has been increased without any money coming to the company—an increase by what might be called watering or stock dividends?

Mr. WORCESTER. The capital stock was made a new capital stock at the consolidation of the Central and Hudson River, in 1869. Aside from that formation of a new company, with a new capital, there was no stock, no debt, no anything of the kind that did not represent money actually spent on the road.

Mr. SHERMAN. Now, how much actual capital stock had been issued at the very time that new basis of stock was agreed upon?

Mr. WORCESTER. The aggregate of the two companies was \$45,000,000 of stock, and 80 per cent. additional on the Central, amounting to \$23,000,000, for interest certificates issued in 1868.

Mr. SHERMAN. The actual amount of the aggregate stock of the two roads in 1869 was \$45,000,000, the Hudson River and the New York Central?

Mr. WORCESTER. Yes, sir; the existing capital stock.

Mr. SHERMAN. And then that stock was increased by 80 per cent. on the New York Central?

Mr. WORCESTER. The interest certificates had been before.

Mr. SHERMAN. Was their amount in that \$45,000,000?

Mr. WORCESTER. No, sir; that issue was additional, but it was done before 1869; it was done in 1868.

Mr. SHERMAN. Then in 1869 the aggregate stock of the two companies was \$45,000,000, and this new standard was made, as you say, upon that basis you spoke of?

Mr. WORCESTER. Yes, sir; it was in round numbers \$45,000,000 and \$23,000,000 of the interest certificates, making an aggregate of \$68,000,000.

Mr. SHERMAN. Then you adopted the standard of \$90,000,000?

Mr. WORCESTER. Yes, sir; but that included, in addition to the items already spoken of, which were those of the New York Central Road alone, \$16,000,000, which was the amount of the capital stock of the Hudson River Road.

* * * * *

Mr. WORCESTER. I should like now to say something about the subject of rail transportation generally, concerning which there is a vast amount of misapprehension.

It is said, and in a way that implies what is wrong to a greater or less extent, that just as soon as winter comes on and navigation is closed railroads put up their rates. On this point especially the misapprehension of which I spoke is very great. Why do not the water lines keep their communication open all winter? They say they cannot do it. To say, however, that water communication cannot be kept open is simply saying that something is impossible. Impossibilities—absolute ones—are very few now-a-days. It may be safer to say that it would be difficult, very difficult, and expensive. It may be said, also, that a railroad cannot be run in winter—certainly not without great sacrifices. But the railroad is expected to keep its communication open in winter under all circumstances. If any railroad company should fold its hands and say that it could not keep its line open, I do not know what would be said. But with a water-craft, the minute ice skims over the water “navigation is closed,” and it stops. In the spring, when the ice is gone, by

natural means, "navigation is open," and between these times there seems to be no responsibility for action.

Now, I beg to call attention to the fact that while the cost of keeping a railroad open in winter is very great indeed, the effects of winter service extend much beyond what appears on the surface. The expense directly connected with winter operating is not really the great expense. Preparing for winter service, and recovering from its effects, are the great features of summer labor. As soon as winter has gone, and spring begins to come on, when the frost commences to come out of the ground, the work of repairing damages begins. Much the larger part of summer and fall work—the expense of adjustment and alignment of track and the repairs of roadways—are due to the effects of winter. To speak within bounds, one-half the summer expenditures are caused by the effects of winter or the winter service. The whole summer is spent in preparing for the battle of winter. The common inquiry among railroad managers in the fall is, "How are we prepared for 'going into' the winter?" the idea being just that of "going into" a fight; and when winter comes on, the breaking, smashing, and disarranging of road and rolling-stock begins. The point aimed at during the summer is to get up to the very highest condition of service the roadway, motive-power, and rolling-stock, and when these have gone through the winter they come out in the spring just in a condition to commence repairing again, and so on each year. The entire cost of the renewal of rails on railroads appears in the expenses of the summer months. There is not a rail laid in winter, except in a case of absolute necessity, such as where one breaks, and it must be borne in mind that where a water line takes business away from a rail line in summer, the cars that the rail line is expected to have ready as soon as the water line chooses to say "Navigation is closed," "We stop," and shippers rush to the rail, lie idle all the summer. It is not generally understood, but it is a fact, nevertheless, that cars and engines deteriorate just as fast when they stand still as when they are in service.

MR. CONKLING. You mean now deterioration as distinguished from friction?

MR. WORCESTER. I mean rather more than that. I mean that they would become useless and dilapidated fully as fast.

MR. SHERMAN. That is, they grow old as fast?

MR. WORCESTER. Yes, sir; even counting in the chances of breakage in service.

MR. DAVIS. Do you include the wheels in that estimate?

MR. WORCESTER. Not the wheels considered separately; but I am speaking of the car considered as a whole. The "life," as it is called, of a car is, for all practical railroad purposes, just as long when in active railroad service, even with the accidents attending it, as when standing still. The cost of hauling, and it alone, is special and incidental to the movement. This rule does not apply quite so broadly to engines as it does to cars. As to cars, it is strictly true. The Hudson River division of our road has had very large experience on this point, because of the effect of the Hudson River, which, of all water communications, is, perhaps, the best and most efficiently worked. When people sometimes make comparisons of summer and winter rates, and so freely express opinions as to the relation such rates should bear to each other, they are usually perfectly unaware of the conditions I have stated, and equally so of the fact that summer rates can be made lower than they otherwise would or could be, because the cars that have to be held in reserve for the service of winter (for every one expects cars to be plentiful just as soon as they find it convenient to transfer business from the

water lines) are spoiling just as fast as if used, and that any rate that pays simply the haulage is at least protective.

Mr. SHERMAN. How does the volume of your business compare in summer and winter?

Mr. WORCESTER. In winter it is largest. The ordinary winter months are larger than summer months. Between Albany and New York freight that leaves the former place on a steamboat in the evening arrives at the latter in the morning, so that practically there is no gain in time by rail, and this makes the river between those places a favorite means of shipping during the summer. When, however, the ice interferes it is sometimes claimed that the road should then take the business as cheap as when cars were lying idle in summer. This would be an absolute impossibility. There never was a case, however, in which anybody who was willing to make a contract with the railroad to ship by it the year round could not have a rate very nearly, if not absolutely, the same for winter as for summer. We are always ready to make such contracts; but to be patronized only when other communications are closed, and when the expenses, direct and indirect, are of the kind I have stated, and then to have rates such as are frequently demanded, is the very climax of misunderstanding. It may be proper, perhaps, to state here that as a rule the winter rates on our whole road are approximately 15 per cent. higher than those of the summer. Those on the Hudson River division, owing to the peculiar circumstances to which I have alluded, are somewhat more.

Mr. SHERMAN. Are you confining yourself down to your own line or to through rates?

Mr. WORCESTER. I am speaking of the through rate, or of our proportion of the through rate. Our local rates are always founded upon our proportion of the through rate.

I showed you a little while ago a statement showing the diminution in rates on the Central from 3.26 per ton per mile, in 1865, to 1.49 in 1871—the latter year being less than one-half of the former—and I will now read to you a part of the annual report of the Lake Shore and Michigan Southern Road for the last year, showing how a similar diminution has been going on on that line, and the effect thereof:

It is a fact worthy of note that rates have of late years tended downward so rapidly that the rate per ton per mile in 1872 is but little more than half the rate of 1868.

The ascertained results are as follows;

1868	2 43-100 cents per ton per mile.
1869	2 34-100 cents per ton per mile.
1870	1 50-100 cents per ton per mile.
1871	1 39-100 cents per ton per mile.
1872	1 37-100 cents per ton per mile.

Had we received the rate of 1868 (two and forty-three one-hundredths cents per ton per mile) on the tonnage of 1872, the earnings from freight would have been \$22,133,751, instead of \$12,613,499, yielding—instead of barely 8 per cent. upon the stock—28 per cent.

These figures disprove the assertion, so frequently made, that railroad companies make extortionate rates for their own benefit and against the public interest; and they establish the fact that the policy of this company has been to reduce the rates as rapidly as could be done consistently with the maintenance of the property in good condition.

The roads are doing a larger business at reduced rates, with about the same resulting profit. As fast as business increases rates diminish, so that the net result is very substantially the same.

Mr. DAVIS. Into how many classes do you divide your freight?

Mr. WORCESTER. We divide freight going west into four numbered classes, and one called "special," and coming east into four regular classes, and flour as a separate class.

Mr. DAVIS. What is your first-class rate to Buffalo now?

Mr. WORCESTER. Our first-class local rate to Buffalo is 17 cents. The rate to Chicago on "special" (which is cheaper than fourth-class) is now 25 cents, and of this our proportion is about 12. There are fractional variations between the north and south shore of Lake Erie lines, but 12 cents is about our average proportion of rate to-day.

Adjourned.

Mr. WORCESTER. Mr. Chairman, I occupied the time of the committee pretty largely yesterday, but any one of the sub-divisions of this matter is of importance enough to consume as much time as I used yesterday on all of them. I had a few points that I did not speak on as fully as I desired to yesterday, which I have noted for the purpose of speaking on this morning, but they would take much more than the twenty minutes which the committee can now give. As permission has been given to add in writing anything further that I might otherwise say, I will, perhaps, avail myself of that permission, and will not occupy more than the time allotted.

I stated yesterday the diminution in rates that had taken place on the New York Central road from 1865 to 1872, and also on the Lake Shore and Michigan Southern, and, if you remember, the diminution was about the same on each road. I intended to take in the Michigan Central for another. Those three illustrate fairly the process that is going on over the whole railroad system.

There is an article published in *The Nation* of this week which presents the affairs of this road in a very clear manner. The writer says he is not an employé of any railroad, and owns no stock, &c., but as the figures given are correct, I will avail myself of his labor, and, if there be no objection, I will read it. Please remember that this company found itself unable to pay a dividend at the last regular period.

PROGRESSIVE DECLINE IN RAILROAD FREIGHTS.

To the Editor of The Nation:

SIR: Your correspondent, "New Englander," makes it very clear that the farmers, in their controversy with the railroads, must use more conclusive arguments than the stale charge of "watered stocks." It is quite probable, as your correspondent supposes, that the so-called watered-stock roads carry farm produce at as low rates as make the tariff of transportation lines whose stock and bonds represent actual cash payment for their full amount.

The practical question is, *What are reasonable charges per ton per mile?* Further, how do these charges compare with those of former years, when farmers had not made the discovery that they were robbed by the railroads? Comparatively, are they moderate or excessive? And do our railroads now pay their stock and bond holders an exorbitant profit? On these points I have just found some most instructive reading in the recent report of the Michigan Central Railroad. This road is one of the leading arteries to and from the West. At Chicago it has close connections with those powerful corporations, the Illinois Central and Chicago, Burlington and Quincy roads, and at the East it connects with the Great Western of Canada, leading to the New York Central at Suspension Bridge. Its stock and bonds are largely owned, and the road is wholly controlled, by such "bloated bondholders" as the Thayers, Forbeses, and Hunnewells, of Boston, and Moses Taylor and John Jacob Astor, of this city, and the road has probably been diluted by the watering process as little as any Eastern or Western road. In construction, equipment, and in the talent of its executive and subordinate officers, it is in every respect a first-class road. The stock of this company during the ten or twelve years previous to the last has ranged from 110 to 125, and, until a year past, has uniformly paid 10 per cent. annual dividends; and any merchant, manufacturer, or artisan may be challenged in vain to assert that such a return for a precarious investment was unreasonable. Now, this powerful company has paid nothing in cash to its stockholders for more than twelve months, its entire earnings having been expended on the road. Further, under the pressure of the absolute requirements of the road for new rails, double-track equipment, &c., more than five millions of dollars have, during the past year, been raised by the sale of bonds, and expended to keep the road up to the highest point of efficiency for its future service, for which end the

directors (who are the largest stockholders) consider that stockholders should forego without murmuring their present reduced profits. The result of passing dividends and further bonding of the road has depreciated the stock to the neighborhood of 90. It is quite probable that the indignant farmers who had accumulated a few earnings before the robbery began of what they had not accumulated, may have opportunity to invest in this first-class railroad at even a less price than 90 before good dividends are resumed. What has caused these meager earnings and this depreciation of stock, and afforded clamorous farmers and others opportunity to buy good railroad stocks at a bargain? Let one of the ablest men of the West tell us. The president of the Michigan Central Road writes from Detroit in June last in an apologetic tone, giving as the cause of their disappointment, among other reasons, the following:

"Allusion has been made in the reports of this company for two or three years past to the rapid construction of railroads which might affect its local traffic by competition at its local points. The effect of the intense competition for through business is probably understood by all stockholders. At Kalamazoo the road is crossed by a branch of the Pennsylvania system of roads running far north into the State; also by a branch of the Lake Shore and Michigan Southern to Grand Rapids. At Battle Creek it is intersected by the Peninsular Road, connecting with the Pittsburgh and Fort Wayne, and also with the Detroit, Lansing and Lake Michigan at Lansing. At Albion and at Jackson it is intersected or reached by two other branches of the Lake Shore and Michigan Southern Road. At Wayne it is crossed by the Flint and Pere Marquette. At all the important points on the main line, and at several points on the other division lines, full competition is established, and substantially the rates at all local points are as fully fixed by competition as are the through rates. The result has been everywhere a reduction of rates, and, for the information of stockholders, we place before them the earnings from freight, both local and through, for the years running from 1865 to 1873, inclusive of both years, stating the number of tons carried in each year, and the number of tons carried one mile in each year, and the gross earnings therefrom, and the rate of freight per ton per mile which has ruled each year:

	Tons of freight moved.	Tons moved one mile.	Freight earnings.	Earnings per ton per mile.
				<i>Cents.</i>
1865	485, 275	72, 937, 319	\$2, 233, 529 47	3.06
1866	533, 451	84, 897, 713	2, 208, 591 82	2.60
1867	578, 177	91, 950, 418	2, 285, 521 69	2.49
1868	638, 586	101, 264, 251	2, 480, 974 16	2.45
1869	802, 935	131, 857, 774	2, 775, 200 48	2.09
1870	823, 770	132, 903, 174	2, 634, 438 87	1.98
1871	1, 105, 875	190, 606, 687	3, 072, 557 58	1.61
1872	1, 238, 313	216, 739, 737	3, 379, 625 54	1.56
1873	1, 416, 792	246, 078, 512	3, 652, 933 41	1.57

"It will be noticed how gradually but certainly rates have been sinking from $3\frac{6}{100}$ per ton per mile, in 1865, to $1\frac{4}{100}$ in 1872, with slight increase in 1873. It follows that we are doing all freight business, including local as well as through, on an average, at very nearly half what the rates were eight years ago. To illustrate the effect of this, take the year 1868 as an example. This is only five years ago, and then the rates had declined from $3\frac{6}{100}$ per ton per mile in 1865 to $2\frac{4}{100}$ in that year.

"The gross earnings from freight in that year were \$2,480,974. In that year the surplus to be divided among stockholders, after paying expenses and interest, was \$944,328.

"Now, had the company been compelled to do that business that year at the rates of last year, viz, $1\frac{4}{100}$ per ton per mile, the gross receipts from freights would have been \$1,579,722, instead of \$2,480,974, and the difference would have been \$901,251, which is very nearly the total surplus of that year credited to income account. If we had also been compelled to do the through passenger business of that year at present rates, which is about four-fifths of the then rate, there would have been a deficit in earnings even to pay interest on the then debt of the company.

"Now, reverse the case, and take the business of 1872. The freight earnings of that year were \$3,379,625, with the rate per ton per mile of $1\frac{4}{100}$. Had we been able to realize the sum of $2\frac{4}{100}$ per ton per mile, the rate of 1868, the earnings from that business would have been \$5,310,123, or \$1,930,497 more than was realized at present rates.

"On the business of the present year, which is a large increase over that of last year, the difference is still more striking. In the last year the gross earnings from freight were \$3,652,933.41. The rate per ton per mile was $1\frac{4}{100}$. At the same rate as in 1868, the earnings would have been \$6,028,923.54, which is \$2,175,990.13 more than was actually realized. That amount has been saved to the producer in a single year by the competition which has sprung up only within the last five years. The only comfort there is in it to railway managers is in the fact that the rate per mile was not reduced during the last year—indicating that competition for the present has done its worst. In fact, it is difficult to conceive that business can be done cheaper with any reasonably adequate profit to the railroad companies."

Assuming that the experience of the Michigan Central as regards competition for freights is representative in a large measure, and that the above statements and tables are trustworthy, directors and stockholders must look elsewhere for cheerful summer reading, or be philosophical under a double misery—the loss of dividends and the violent abuse of gentlemen engaged in an occupation which Washington said was “the noblest employment of mankind.”

The writer is in the employ of no railroad, and neither himself nor family has a present or prospective interest in any railroad stock or bonds; but in this controversy he is of opinion that the item of facts, which Lord Bacon and the late Mr. Gradgrind prized so highly, ought to weigh against mere theories of railroad profits or railroad despotism.

A question was asked me yesterday by the Senator from Ohio, (Mr. Sherman,) that I did not answer then as fully as I would have liked to, and I will say something about it now. It was concerning so-called discrimination, and he gave an example that he thought illustrated it. The case he presented was one of an agreement to make a reduction where a certain fixed large quantity was carried. The general principles of wholesale as distinguished from retail trade, apply to all such cases, without considering the peculiar surroundings of the particular case. A large quantity of business can always be done at a cheaper price than a small, and especially if the large amount be assured. These special arrangements are always dependent on the contingency of the large amount being done. “If you ship so much during the year, we will make the rate so much.” If the shipper does not, by his industry or enterprise, develop or procure that amount of business, he does not get the benefit of the arrangement. These arrangements are simply *stimuli* for enterprise. Their effect is always to develop business, and to do it upon the most strictly legitimate principles. How can such an arrangement be unjust or unfair to other dealers (which was apparently assumed in the case the Senator spoke of, and about which he asked me) when such other dealers may make the same bargain exactly? It is not discriminating against them. They can, if they choose, have the same inducement. Any man offering to ship 3,000,000 feet of lumber could, in all the cases I have ever known, have made the same bargain as did the man the Senator alluded to. I do not want to make any reflections, but the inconsistency involved in the implied criticism in this case is extraordinary. “Cheap transportation” is the cry. Here is a case of cheap transportation—a legitimate case for cheapness—and yet yet there is an *ipso facto* argument made against the railroads.

I said, when I commenced yesterday, that this whole subject naturally divided itself into two parts, facilities and rates. Now, facilities are one thing and rates are another, and the two are not only not necessarily connected, but are quite the contrary. The cry for both, however, comes from the same parties. They want at the same time more facility and lower rates. There might be facilities to carry double the quantity that there is, and yet rates might be such that even then property would not move. The market-price of the commodity might not warrant the movement. There is a point somewhere at which property cannot move without consuming its own value. The difficulty in that respect would be remedied equally well by higher prices for products, but then the laws, the inevitable laws, of supply and demand come in. There is one thing that underlies this whole subject. The supply of certain products is getting to be in excess of the demand, not alone from the production, but from the facility already existing by which such products can reach a market. This ability of an enlarged production to reach market has been caused mainly by the steady diminution of rates of which I have spoken, and eventually it must reach a point where it cannot be carried further. That point is when the rates are reduced to

a minimum, and production cannot be made at a price that such rates will warrant it in moving.

I saw an article the other day containing an elaborate statement with regard to the availability for markets of the various productions of almost the whole world. It was very interesting and very worthy of consideration in connection with this subject. I am sorry I have not got it with me, but quite probably some members of the committee may have read it, and if they have I am sure they will comprehend the force of its statements.

Facilities are insufficient and rates are too high, it is claimed. If rates are so high and produce so much sure profit, how does it happen that parties who want additional facilities do not themselves go into enterprises that will give them such facilities and the alleged profit as well? They say they cannot build railroads. Why not? Have they not the authority? Look at the general laws of, I may say, every State. Have they not the means? Why, the meeting lately called of simply the New York men that were interested in cheap transportation claimed by its advertisement to represent \$500,000,000 of capital and \$5,000,000,000 of annual business! What lacks in authority or means?

There was capital enough represented at that meeting to build all the additional railroads it is claimed we need; and if the profits are so large and so sure, what could be a better investment? The general position of the whole matter is, that the producer wants a high price, and the consumer wants a low price. The amount of production is large, and by means of existing facilities is extensively available. Prices fall in consequence, and although this favors the consumer, he wants a still lower price. Both these interests join in the cry against the railroads, which are the medium of communication between them, and demand that they must be held responsible, and that they alone must bridge over the chasm. Even commercial factors, who, with charges and commissions, stand between producer and consumer, add to the cry—and not in a single instance do they propose to abate in the smallest degree the profit they derive; that profit, upon the lowest computation on the amount of business claimed in the call I have spoken of, would make railroad profit blush.

That during a quarter of a century there should not have arisen some railroad manager who was something more than an extortioner, seems very strange. The men who manage railroads have, and have had, the reputation of being shrewd business men, and any one knows that extortion is not a shrewd business quality. That quality consists in a full appreciation of *meum* and *tuum*, and while these men have had that full appreciation in all other branches of business, is it to be supposed that they would lose it as soon as they entered into railroading? Most of the railroads have changed in their control a number of times during the period I have mentioned, and it would certainly seem as if among the numerous managers there would have been found some honest ones—especially when their individual character for honesty was well established. Such men would not change their characters or part with their sound judgment immediately they came into railroading. I have had a very intimate acquaintance with a large number of the leading railroad men during the time I have spoken of; they have been men in the highest sense of the word, actuated by principles of business equity far beyond the standard usually set up, and in now closing what I have endeavored to make explanatory upon some of the points connected with a great common interest, I cannot refrain from a protest against the unwarranted denunciation of them that has lately been so prevalent.

MONTREAL, *September 16, 1873.*

The committee met to hear statements of Montreal merchants.

Present: The members of the committee, and Messrs. Thomas Rimmer, M. P. Ryan, M. P., John McLennan, Alexander Mitchell, William Darling, Wm. J. Patterson, and Hugh McLennan, merchants and importers, of Montreal.

The CHAIRMAN. Gentlemen: Without any preliminary statement I will say that we are in search of information upon the question of transportation in the grain-trade, &c., and all things appertaining to the subject, of which, perhaps, you are advised. I do not know upon whom to call for certain line of statements; and thought, perhaps, we might as well conduct this matter in a conversational way, and I will ask Mr. Rimmer, whom I know to be well advised upon the grain-trade, to state the difference in the manner of conducting that trade in the Dominion and in the United States, if there be a difference, as to the purchase and shipment thereof.

Mr. THOMAS RIMMER, ex-president of the Board of Trade of Montreal. Mr. Chairman: I am utterly unable to throw any light upon the particular method of transportation in the United States, but I think I can explain the course we pursue in our business here. My firm is engaged in the grain-trade, chiefly in the export of American-grown grain to Great Britain.

I suppose, since the opening of navigation, we have handled about a million and a half of bushels of American produce, and sent it through the St. Lawrence to Europe.

We never get any consignment, and never have had, from the West, and of the twelve million bushels coming down here and exported to Europe, I believe the whole is paid for in cash before it leaves the American ports. A consignment business does not come in this direction at all.

If it suited us to send the wheat from Toledo or Chicago to New York we should do so. We think it much better to bring it in this direction; we think it has some advantages. We find an immense competition, of course, from New York, and I may say that in my own business of a million and half bushels about 90 per cent. is done on English orders. Ten per cent. is done on other accounts, consigned to Great Britain.

In addition to the competition we experience from New York we have a very keen competition from the east of Europe on the order business, and I was struck by a remark of Senator Sherman that America will be by-and-by the great granary for the feeding of Europe. We do not find that it is so. Russia is gaining ground as a food-producing place for Europe. Russia in an average of years lately has exported more wheat and grain than the United States; and the quality of the wheat being produced there is decidedly improving. They are taking more pains in their cultivation, and their wheat is cleaner and is rather enhancing in price. We do not find this the case with Illinois wheat so much, although I believe in Minnesota we get an improved kind of wheat. Of course the extraordinary effort that the Russians are making for improving their transport tells very much against us here. For example, the price of a bushel of corn at the present time in Chicago is about 43 to 45 cents—probably 45 cents—on board a schooner, but the cost of taking it to England is at least 55 cents in American currency, so that the cost is actually much larger in taking it even by water communication all the way. The cost of transportation is larger than the original price of maize. The cost of bringing a bushel of wheat or corn from Odessa is somewhere about one-half the price of bringing the same

from Chicago. Here we are getting very much also into steam carriage, and we find that it answers us very well; steam transportation I mean from here.

I scarcely know the points that are desirable to be brought out, and I had not prepared any statement on the subject, I am sorry to say.

The CHAIRMAN. The points that we desire brought out now, or that I will call your attention to now, are the relative advantages or disadvantages of these foreign countries for competing in the European markets with America.

Mr. RIMMER. Of course I am more acquainted with the English market than with the American market. In the English market they have so very many other countries beside Russia, even, that I would liken the English demand to a series of concentric circles, and when you have a very high price, the English can go a long way and draw in their supplies from Australia, California, the East Indies, the Cape of Good Hope—as they did last year—and from other places.

All these have to come in direct competition with American grain. When prices are very high they can afford to pay high freight to send to these far distant countries and bring in the grain. When prices are low, of course the freight puts a stop to that, because the grain, we will suppose, is generally at a low price in those distant countries, and there is not much room to cut down the price of it.

The CHAIRMAN. Did you say the cost of transporting from Odessa is greater than from this country?

Mr. RIMMER. It is very much smaller at present. The cost of freight is about seven and sixpence a quarter, and from New York about eight and sixpence.

The CHAIRMAN. Do you know their facilities for shipping in Russia? I have understood they were very bad.

Mr. RIMMER. They are wonderfully improved. I do not know much about that, but I only infer it from the vast quantities they load in Odessa. It is something immense.

Mr. SHERMAN. How far is the grain-growing region from Odessa; how much interior transportation do they have to reach the main source of supplies?

Mr. RIMMER. The railway is being run from Odessa right into the north of Russia, and the railway extension in the last three or four years is fourteen hundred miles from Odessa—the branch line. As one of the results of the Russian war in 1855, the English government got a commission appointed to improve the navigation of the Danube, and have made it navigable 18 feet deep. Before the war it was only 14 feet. There were many bars. The water at the mouth of the river now admits 18-foot vessels. It seems to drain a territory of about 300,000 square miles, an immense wheat and corn producing country; and they are producing cheaper every year, while it seems to me we are not doing so.

Mr. SHERMAN. The railroad system is extended from Odessa how far?

Mr. RIMMER. Fourteen or fifteen hundred miles, and still increasing. There are many wheat-producing countries there in the center of Russia that are now largely engaged in sending wheat down to Odessa for export to Europe.

Up to the last ten years they never got a dollar for a bushel of wheat at all. It was all a system growing among the states, and a system of barter, but now it is as much a new country for all commercial purposes of wheat production and export as any part here.

The CHAIRMAN. What is your judgment as to the probable supply of

the markets of Europe as between America and Russia, with existing facilities for transportation; I mean is America or Russia more likely to supply the European demand?

Mr. RIMMER. At present Russia has an advantage, but America has still more advantage in the quality of grain, and maintains that advantage. Russia, however, is apt to have considerable variation in the crop. This year they have had a great drought and poor crop. I think their crops are subject to more contingencies than they are on this continent.

Of course when England and France together have large crops you must always expect an extraordinary low range of price. That must always be the case, and always has been. For instance, England imports about 100,000,000 bushels of wheat a year for her ordinary needs—from eighty to one hundred million bushels. France very often supplies a considerable portion of that; but this year France will have to import in large quantities both from America and Russia. That is the reason of our high prices in Europe.

The CHAIRMAN. Why did you state a while ago that you thought Russia had the advantage of us and would probably gain on us; what are the conditions which would give her the advantage?

Mr. RIMMER. They have a cheaper population. Everything in Europe seems to me to be rather toward low prices. In America it has sometimes seemed to me that the tendency is to high prices in everything; high wages. Everything is dear in America, comparatively speaking. For instance, in England if anything can be possibly produced in any other part of the world cheaper than it can be produced there—be it anything in the world—cotton, anything—a fleet of ships is sent out to undersell their own men. In America you pursue a contrary policy and shut things out of your country by high duties, that can be produced cheaper away than at home. A very striking instance is in the supply of our lower provinces: I think they consume something like 400,000 barrels of flour a year in Nova Scotia and Newfoundland. They do not raise any wheat. Now as long as you used to take coal from there vessels would take coal down to New York and bring back flour to Halifax and Saint John at sixpence or eightpence a barrel; but a duty of half a dollar is imposed on it, and the consequence is you have not so many coal-vessels going down and not so much flour to bring back. That trade is now given to Montreal. She supplies about 400,000 or 500,000 barrels of flour, having taken away the trade from New York and Boston—especially from New York. They have no occasion to send their vessels there, you not taking the coal.

In Russia you have an extremely cheap population. Everything seems to be driving down into cheap prices. The freight from Russia is always a little cheaper. They can employ a cheaper class of vessels. A very large portion of our wheat trade here is carried across the Atlantic in winter, and it requires a more expensive class of vessels than are run to Russia. It is not such a laborious voyage to Russia as an Atlantic voyage.

The CHAIRMAN. What, in your judgment, fixes the price of cereals in this country and in ours?

Mr. RIMMER. What fixes the price in your country is the price in England, for although I think you raise about 250,000,000 of bushels of wheat and about 1,000,000,000 of bushels of corn, and although you really export only about 10 per cent. of all that vast produce to Europe, it is the 10 per cent. that regulates the price of all the rest, and that is seen in every and all experience. To-day we receive, for instance, by

cable that maize has gone up about three cents a bushel. To export it we can give three cents a bushel more to-day than yesterday. The consequence is we are willing to buy in Chicago at that price, but that is three cents upon every bushel of maize there, not only upon what we purchase for export, but the market goes up. If you made your facilities for transportation all the cheaper it would really be adding to the value of all the maize you raise, because we could give a little more for it for export. I have no doubt whatever that the price of export, and, consequently, the English market, entirely regulates your prices. You get the English market down a shilling, and down goes Chicago and Milwaukee the very day.

The CHAIRMAN. That is an almost invariable rule, is it not?

Mr. RIMMER. It is an absolute, invariable rule. The circumstance that fixes the price in England is the English and French crop together; not the American crop, or but rarely, except in a downward way. The price of maize at present is only 45 cents in Chicago, but we cannot export it at that price to England. To export it to England it would only leave the shipper 35 cents a bushel, because we get it cheaper from the cities on the Danube.

There is a little temporary variation there this year; they have a poor crop there, but that is only beginning to take effect now. Up to July, it was cheaper from those ports than from here.

The CHAIRMAN. Is the consumption of corn increasing or decreasing in England?

Mr. RIMMER. It is increasing enormously; so much so that many farmers turn their attention to raising wheat, and even buy American or Danube corn for consumption on their own farms to fatten cattle, for it is not yet used in England for human food. A very little in Ireland, perhaps, but not at all in England. In England, up to recent years, corn was scarcely used at all, but has increased in consumption much. The London Omnibus Company have about eight thousand horses, and they have always fed them on oats, there being a prejudice in their favor; but if they are dear the company pays no dividend, the consumption is so enormous. Some years ago they turned their attention to corn, and it answers admirably. It saved them £16,000 in one year, because the corn was cheap, or about \$80,000. This they saved in the simple item of feed to their horses; but that was chiefly in American corn and during a year when it was very low.

It is also now greatly used in distilling, starch-making, and especially in feeding hogs. If corn could be sent to England a little cheaper, there is no limit to the consumption of it. One reason of that is the change in the articles of food among the English population. They now consume, I suppose, three or four times as much animal food as twenty years ago. The habits of the people have changed. For the last ten or twelve years we cannot afford to pack beef in England; I suppose, for fifteen years; nor for twenty years can we afford to pack pork, because the price of the fresh meat is so large, the population being large and the country very small, and it is difficult to export fresh beef from here; but we can export salt provisions. A larger consumption of animal food has created an immense demand for feeding-stuffs, especially for corn, which has become a favorite. I think that in England the consumption of corn is about 50,000,000 bushels a year, a mere trifle. I have no doubt it could be quadrupled if corn were to come down something in price.

Corn is at the present time the cheapest feeding-cereal we have. Turnips are cheaper, but do not answer all the purposes, of course. If

it were cheaper still, it would supersede the barley and oats, which are used to a certain extent.

The cause for the demand for different kinds of wheat grows out of the condition of wheat in England. That is a very strong feature in our wheat trade—for instance, if our wheat in England lacks strength. We are very fond of the Milwaukee or Minnesota wheat. It is one of the strongest. Upper Canada wheat is still stronger. By "strong" I mean that wheat, as a given quantity of flour, absorbs a larger quantity of water. I suppose a barrel of Upper Canada wheat may make four pounds of bread more than a barrel of other flour; but sometimes, of course, we want color, and then we look for California wheat. If they fail in France or Prussia, we must go somewhere else for it, and then we get the California wheat. In England they never think of grinding as they grind here, one single kind of wheat, but generally mix three or four kinds to grind. Hence, sometimes I have seen Milwaukee wheat at a higher relative range than it would otherwise be if that particular class was wanted.

At the present time there has been a great deal of rain in England, and I suppose the English wheat will come to market and the miller will want a proportion of about five bushels of foreign wheat to three of home-grown wheat for grinding, so that, even if they have a very large crop, they must have foreign wheat until their own comes into condition, which in England does not happen, perhaps, until after there has been a frost.

The CHAIRMAN. I understood you to say that you make an absolute purchase in the western markets.

Mr. RIMMER. Always, sir.

The CHAIRMAN. No consignments?

Mr. RIMMER. None.

The CHAIRMAN. How do the charges for transportation usually compare between this point and New York? You ship, of course, from the most economical point?

Mr. RIMMER. Yes, sir, we have shipped from New York, and sometimes from Boston. We prefer the Saint Lawrence, chiefly because we are here and can do our own business; and the business is so close one must put one's own labor in, and cannot well afford to pay charges to a commission-house on the sea-board in America.

The CHAIRMAN. About what is the margin usually between the two points?

Mr. RIMMER. I should say it was five or six, or sometimes eight, cents a bushel in favor of Montreal; but, then, on the other hand, we get a cheaper ocean freight from New York than from Montreal, which about compensates it.

The CHAIRMAN. I mean what is usually the margin between the two, or does it vary?

Mr. RIMMER. The margin is almost always in favor of Montreal; that is to say, the New York purchaser and we ourselves are exactly on the same footing; we both pay the same price in the market; but we can bring it here much cheaper than the New York merchant can take it to New York, and, we believe, also in better condition. We bring it through colder waters and in larger bulks. Our barges bring 20,000 bushels down the canal, whereas down the Erie you bring seven or eight thousand bushels; and we think the larger barge, drawing eight or nine feet, and colder water, brings it in cooler condition. That is the general experience we have. But when we get here we are at a disadvantage, as compared with the New York shipper, for we have to

pay a higher ocean freight, chiefly because New York is such an immense place for imports and for immigration. There are so many of those enormous steamers—the National Line, the Williams and Guion Line, and the Inman Line—will very often bring out a thousand immigrants, and they can afford to go back all the cheaper. A great number of the vessels coming here this year have come in ballast.

The CHAIRMAN. How do you conduct your wheat trade in the winter?

Mr. RIMMER. We generally let it alone. When we do any we carry it through Portland. If, however, there was a settled trade here, so that there was a traffic up the river as well as down, it would bring a great many sailing-ships and steamers here, and they could go back with cheaper freights or return freights of grain. For instance, I suppose that the average rate of pig-iron freight from here to Chicago has been from two to three dollars a ton, because, as the return propeller goes empty, she would be very glad to take a little freight.

The CHAIRMAN. Is not that trade largely increasing here?

Mr. RIMMER. One thing would check it, the enormous duty, \$8 a ton. But I am disposed to think that the importation of iron is rather smaller this year than it has been before. Before there was a high duty there was a very great trade in carrying iron up to Chicago, and then we brought down freights all the cheaper, and we had cheap ocean freights. We put Russia at defiance in that way.

The CHAIRMAN. How are wheat and corn brought from Chicago here usually?

Mr. RIMMER. Generally by schooners through the Welland Canal down to Kingston, and these schooners will carry about 17,000 bushels without lightening at the Welland Canal. That canal is now being enlarged. At Kingston we always ship it into barges, for we find that a barge, which is only about one-third of the cost of a propeller, is cheaper to bring stuff down a canal than the propeller.

The CHAIRMAN. What is the price of transshipment at Kingston?

Mr. RIMMER. Half a cent a bushel, but it does not enter into the computation with the owner.

The CHAIRMAN. That is included in the price of transportation through?

Mr. RIMMER. Yes, sir. Transshipment has an advantage in airing the grain.

The CHAIRMAN. What size barges do you use?

Mr. RIMMER. Sixteen to twenty thousand bushels.

The CHAIRMAN. A barge will hold as much, then, as a schooner?

Mr. RIMMER. Yes, sir; a barge will hold a schooner-load, in a general way.

The CHAIRMAN. What are your terminal facilities at Montreal for the grain trade?

Mr. RIMMER. As a general thing the barge goes alongside the ship. We avoid warehousing if possible. I think during September of this year my firm has brought down probably 400,000 bushels. The trade has been rather large—between three and four hundred thousand bushels, at all events. I think of that we have had to warehouse about 40,000 bushels. The rest has gone direct from the barge on board ship at an expense of something like five-eighths of a cent, which is all the loading expense, the only expense we have here. There is some small charge for wharfage, a quarter of a cent. At all events, three-quarters of a cent a bushel puts the stuff on board ship and sends it off.

The CHAIRMAN. Do you know your warehousing capacity here?

Mr. RIMMER. I scarcely know that, sir.

Mr. SHERMAN. Please give us the ruling rate of freight from Chicago to Montreal.

Mr. RIMMER. During the months of July and August the rate of freight from Chicago to Montreal was about 15 cents a bushel; probably 16 cents a bushel. We paid about 11 cents a bushel to Kingston, American currency.

The CHAIRMAN. There has been a very sudden rise recently, has there not?

Mr. RIMMER. O, yes, sir; we are paying 26 cents a bushel, American currency.

The CHAIRMAN. Give us your theory of the cause of that.

Mr. RIMMER. I suppose the enormous receipts into Chicago and Milwaukee. They have been quite unparalleled. I see Chicago and Milwaukee have received grain, including barley, rye, and oats very often—three-quarters of a million a day in the two cities together; and the harvest has come in suddenly and largely. Probably the freights were driven too low, and a great many vessels have been withdrawn into the iron and lumber trade. This is an extreme rate, and probably 11 cents was an extremely low rate. I should suppose that about 12 or 14 cents is a remunerative price for schooners to Kingston, and about 4½ cents down. Eighteen cents, I should say, is a paying price for the trade.

Mr. SHERMAN. That includes everything?

Mr. RIMMER. Yes, sir; everything—transferring at Kingston, &c.

Mr. SHERMAN. What is the toll on the Welland Canal?

Mr. RIMMER. One-half a cent a bushel included in the freight.

Mr. DAVIS. When your canals are completed what do you estimate the freight will be?

Mr. RIMMER. It is so much a matter of estimate I have not gone into it. I do not know. I think we shall do it cheaper.

Mr. DAVIS. What is the present cost of a bushel when it goes into your warehouse here?

Mr. RIMMER. We avoid storing if we can, because we have such facilities for shipping. Our winter storage is four cents a bushel for the whole of the winter, and the storage expenses otherwise come to about a cent and a half a month.

Mr. DAVIS. Then the transfer, if it went to a warehouse here, would be about a cent and a half for a month, but less for a shorter time. For the first five days a cent, and half a cent for each succeeding ten days. The prices here are absolutely fixed by competition, are they not, on the lakes and the water?

Mr. RIMMER. Quite so. Our freight from Chicago or Milwaukee to Kingston is always the same as the rate from the same cities to Oswego. Then the rate of freight from Kingston is uniform, 4½ cents a bushel.

The CHAIRMAN. What is the distance from here to Kingston?

Mr. RIMMER. One hundred and eighty miles.

The CHAIRMAN. Why do we import wheat into the United States from Canada? I think I know, but I desire your answer.

Mr. RIMMER. In America they are consumers of very high class flour. Canada white wheats give about the whitest flour that we have on the continent, and the Americans buy our white wheats and consume them, when we cannot afford to do it ourselves nor export it to England, because the English draw their white wheats generally from another source.

The CHAIRMAN. How are your wheats graded in the market?

Mr. RIMMER. We adopt your western grades on your western wheats. Then we have Upper Canada spring wheat, Nos. 1 and 2. We call them

by the class of wheat—Deal wheat, or the other specific names, the Treadwell wheat, &c. Our classification of white wheat is pretty much the same as it is in England.

The CHAIRMAN. Can you answer, or will some one else here answer, more certainly the question as to what your government has done for the improvement of these canals and the enlargement of them? I mean what has been the action of the government upon that point?

Mr. RIMMER. Our government, about eight years ago, made an appropriation for the enlargement of the Welland Canal, but we are not particularly proud of our government, and our greatest comfort is to get them out of our way when we are engaged in commercial affairs. They are now enlarging it from an appropriation made.

The CHAIRMAN. Have they appropriated a specific amount, or only a sufficient sum to carry on the work for the year?

Mr. RIMMER. I cannot say. Our government formerly had the entire control of our harbor here. They have no commercial ideas, and they starve us. We have now got the control more into our own hands, and will push it very vigorously and increase our facilities, which will make our trade all the larger.

The CHAIRMAN. What assurance have you that the government will enlarge these canals, and how is that assurance given?

Mr. RIMMER. They have absolutely made an appropriation for all the enlargement that the Welland Canal requires. I do not know that our other canals require much enlargement.

The CHAIRMAN. I meant the Welland Canal.

Mr. RIMMER. That work is at last in progress, and will be carried out. I have no doubt of that. Contracts are out, and the work has begun. There is no doubt about that enlargement. Then we do not seem to require the St. Lawrence canals, that is, from Kingston to here, to be enlarged, because they already bring down barges of 20,000 bushels, and that is quite large enough. My own opinion is that it is not desirable to bring the enlarged propellers down to Montreal. It would be rather undesirable, because barges are so much cheaper, cheaper handled, and can do the canal-work at a less money. The propeller does lake-work all the better.

Mr. DAVIS. To what size is the Welland Canal being increased?

Mr. RIMMER. I do not know that, sir. I have not the figures with me.

The committee here adjourned.

OSWEGO, NEW YORK,
Thursday, September 18, 1873.

The committee met at 10 a. m., and were addressed by Hon. John C. Churchill.

Mr. WINDOM. Gentlemen of the committee, I understand that the citizens of Oswego desire, through a representative, to present very briefly some statements on the subject of transportation. We are now ready to hear them.

Hon. JOHN C. CHURCHILL. Mr. Chairman and gentlemen of the committee of the Senate of the United States: The board of trade of this city, on learning of your appointment, and of your proposed action in examining the different routes between the West and the East, appointed

a committee of their members for the purpose of furnishing such information as they could obtain for the assistance of your committee in arriving at your conclusions, and they desire me to present in a few words what we regard as the superior advantages of the Oneida Lake route as a communication between the West and the East.

The presence of you, gentlemen, here, representing widely separated States of the Union, is sufficient evidence that there is some great national necessity which is pressing upon the attention of the American people, and when we look at the last census of the United States and find that our six Northwestern States produced 75 bushels of cereals to each individual of their population, while our six Northeastern States produced less than six bushels to each of their population, we can very readily see what great national interest there is existing which called for the creation of your committee.

The great problem which has been committed to you to solve—one of the most important now before the American people—is how to make this great production of the West, which is now joyless because profitless, joyful because profitable, and at the same time to make its consumption less bitter because absorbing less of the rewards of toil in providing the laborer and his family food.

We think experience has shown that the railroads are not sufficient to fully answer this question. The superior cost of movement by those as compared with the water, and also the facilities which exist for these great corporations to combine for the purpose of putting up freights, points to the water-routes of the country, which by the fact that there competition is open to everybody, and that high freights upon them start into activity every ship-yard upon the lakes and every boat-yard upon our rivers and canals, show that those are the true regulators of the freight tariffs of the country.

And among these water-routes we call your attention to the Oneida Lake route. We have prepared a map, a copy of which will be placed in the hands of each member of the committee, which shows the different routes from the West to the East: from Buffalo by the Erie Canal to Albany; through Lake Ontario by Oswego to Albany; from Lake Ontario through the Saint Lawrence River, and by the Caughnawaga Canal to Lake Champlain, and the Champlain Canal again to Albany.

Putting your finger at Albany, and tracing the blue lines upon the map to the west to the red line, and from there through the Oneida Lake and the red line to the blue line again, on the Oswego River, and so to Oswego, and you find a continuous water line.

You are following the Mohawk River to Rome; there Wood Creek comes within a mile of the Mohawk, and runs into Oneida Lake.

From Oneida Lake Oneida River flows into the Oswego River, and from there to the lake.

In making that passage you have passed entirely through the great Appalachian range of mountains, extending from Quebec to the State of Mississippi, and which is the great obstacle to communication between the producing and the, at present, consuming portion of the country. You have passed through that range at a point so low that the waters of the Mohawk River, rising and draining the western slopes of the range, have passed through it and so on to the Hudson River and the tide-waters of the Atlantic, and at no point at an elevation of more than 180 feet above the waters of Lake Ontario.

We say that that is the natural route. It is the route which nature herself has pointed out, and it was provided by her as a wonderful provision for the future wants of the country.

For the first century after the English established themselves on Lake Ontario, it was the route by which communication between the East and the West was made, and it was abandoned so far as the route west from Rome is concerned, not because of any inferiority in its advantages, but because at the time when we entered upon the construction of our canal system, the same cry was coming from the valleys of the Genesee, and the Niagara and the central lakes of the State of New York, which now comes to us from the West.

Their productions, their wheat—the finest wheat in the world—was worth half a dollar on the Genesee, and a dollar and a half on the Hudson, and it was for the purpose of giving an outlet to that wonderfully productive portion of this State that when the State located its canals, it located them through to Lake Erie at Buffalo, instead of establishing them on the line which had been used for a century before that time, through the Oneida Lake, terminating at Oswego.

There is one fact which is now transpiring, which changes very much the national problem, and that is the fact that the Canadian government have already entered upon the enlargement of the Welland Canal. In three years from the coming spring that canal will be enlarged to a capacity of 1,500 tons. It now takes through vessels of 500 tons only. When that improvement is completed the produce of the West, which now, by the force of the obstruction of Niagara Falls and of the limited capacity of the Welland Canal, terminates at Lake Erie, will have entered Lake Ontario, and the question whether it shall leave Lake Ontario over American soil, or by a foreign route, enriching our commercial rivals, is one of the questions which is before you for your consideration.

That we cannot compete, even with large vessels, with our present canal facilities, with the Saint Lawrence route and the advantages of Montreal, has been shown by the experience of the last two or three years.

Formerly, when the depth of water upon the Saint Clair flats compelled the use of vessels upon the upper lakes which could pass the Welland Canal, as was the case until 1858 or 1860, about the same quantity of grain from the West was received at Oswego as at Buffalo for eastern transmission; but with the deepening of the water of the Saint Clair flats, vessels used upon the upper lakes were from year to year enlarged, until finally they could not pass the Welland Canal into Lake Ontario, and the consequence of the greater cheapening in the use of those vessels, and the advantages it gave to the Buffalo route, has been such that for years we, at Oswego, have been substantially out of the field as competitors for western grain. We could not compete on even terms with the large vessels used upon the upper lakes, even with the disadvantages of the greater length of canal which our Buffalo friends were obliged to use.

But three or four years ago the Canadians introduced at Kingston the use of barges upon the Saint Lawrence, and the practice of transshipment at Kingston. Before that time, when lake vessels passing through the Welland Canal into Lake Ontario themselves attempted to go down the Saint Lawrence to Montreal, we found no serious injury from the competition.

There was very little grain that did not take the Oswego route if it once came into Lake Ontario, in preference to the Saint Lawrence route. But with the transshipment to barges at Kingston, just opposite us on Lake Ontario, at the mouth of the Saint Lawrence River, the use of lake vessels where they could be cheaply used along the length of the lakes, and the use of barges on the Saint Lawrence to Montreal, it has

given them such an advantage that they have drawn every year for the last two or three years very seriously upon our trade, not only at Oswego, but at Buffalo. They took thirteen millions of bushels of grain the year before last, and seventeen millions of bushels the last year. I am told they will take twenty-five and perhaps thirty millions of bushels this year. So they are continually drawing, not only upon Oswego, but upon Buffalo, and have established the fact, by the experience of the last two or three years, that grain in Chicago can be put in Liverpool cheaper by that route than by either the Buffalo or Oswego route.

They do that now with the necessity of using small vessels on the lakes in competition with the large vessels going into Buffalo, but when they are built to take the large vessels of the West into Lake Ontario and pursue this same practice, the committee will at once perceive that the advantage which they now possess will be greatly increased, and that our entire foreign export of grain must be expected to seek that route to market, instead of passing over our own territory and enriching our own people.

In presenting the Oneida Lake route as we do, we say that it is the shortest route between the East and the West.

The actual miles of these different routes from Chicago to New York is, by the way of Montreal, 1,643 miles; from Chicago to New York by the way of Buffalo, 1,425 miles; from Chicago to New York by the way of Oswego, 1,410 miles. That is, we have fewer miles, as a matter of fact, by our route, though the difference between our route and the Buffalo route is not so very considerable, being only fifteen miles.

But the true difference is not shown by a mere statement of these distances. They are made up of lake and of river and canal navigation. They vary in the quantities of each of these, and as the cost of transportation over each of these varieties of navigation is different, of course we can only get at the real difference between the three routes by reducing these routes to one or other of those methods of navigation; and that is a matter which is very easily done.

Our most careful observers of the cost of navigation by these different routes, and among these there is none more eminent in the United States than the Hon. Wm. J. McAlpine, of Albany, have stated the cost of transportation by the different methods as follows:

It costs a mill and a half per mile to move a ton upon the lakes. By the rivers it costs two mills to move a ton a mile. It costs four mills to move a ton a mile upon ship-canal; that is, canals taking vessels from 700 to 1,000 or 1,200 tons. It costs six mills to move a ton a mile over our present Erie or Oswego Canal.

The CHAIRMAN. Before you leave that point, you understood that estimate to be based upon the actual cost to the carrier?

Mr. CHURCHILL. Yes, sir; the actual cost of movement. It excludes tolls. In other words, it supposes each of these water-routes to be without charge; I mean the lake, the river, or the canal equally without tolls. But it does take into account the interest on the cost of the vessel, the cost of her running—all expenses, in fact, with the exception of this item of tolls and maintenance of water-routes.

Mr. SHERMAN. Where do you find that computation of Mr. McAlpine's?

Mr. CHURCHILL. It is not in the book which I have before me, but it will be found in other documents which I have presented to the committee, and will be found in an address which was made by Mr. McAlpine to the Chamber of Commerce of the city of New York, on the 8th

of May, 1873. If I mistake not the honorable chairman has a copy of the document.

Now, taking those figures from them we derive these facts: from Chicago to Albany by the way of Buffalo and the present Erie Canal involves the use 920 miles of lake navigation at one and a half mills per ton a mile, which, converted into ship-canal navigation, equals $346\frac{2}{3}$ miles. The 352 miles of Erie Canal navigation is equal to 528 miles of ship-canal navigation. The ship-canal being four mills, and the Erie Canal six, the equivalent of the 352 miles of Erie is 528 miles of ship-canal navigation, making the distance from Chicago to Albany by the Erie Canal as now constructed the equivalent of a ship-canal $874\frac{2}{3}$ miles long.

Supposing the same route to be enlarged, that is, the Erie Canal to be enlarged to a capacity to take a vessel of from seven to eight hundred tons through, and then the calculation would stand: 925 miles of lake navigation would be equal to ship-canal navigation $346\frac{2}{3}$ miles, as above, and the Erie Canal, its length being 352 miles, becomes 552 miles of ship-canal navigation, making the whole distance $698\frac{2}{3}$ miles. That is, the distance from Chicago to Albany by the way of the lakes and Buffalo, and the Erie Canal enlarged to ship-canal size, is the equivalent of a ship-canal $698\frac{2}{3}$ miles long.

Chicago to Albany, by the way of Lake Champlain, involves 1,173 miles of lake navigation, which is equal to ship-canal navigation $439\frac{2}{3}$ miles.

One hundred and sixty-five miles of ship-canal navigation, equal to that, and 157 miles of river navigation—that is, the Saint Lawrence and the Richelieu River, from St. John's to Rouse's Point—which would be equal to $78\frac{1}{2}$ miles of ship-canal navigation, and that makes the route from Chicago to Albany, by the way of Lake Champlain, equal to ship-canal navigation of $683\frac{1}{2}$ miles.

The entire route is the equivalent of a ship-canal navigation of $683\frac{1}{2}$ miles.

Now the route by the way of Oswego and Oneida Lake would be $1,063\frac{1}{2}$ miles of lake navigation, equal to ship-canal navigation of $398\frac{1}{2}$ miles, and $198\frac{1}{2}$ miles of ship-canal navigation, which is equal to $198\frac{1}{2}$ miles, making the entire distance $597\frac{1}{2}$ miles.

I do not believe that those figures can be successfully attacked, and they show this, that the route from Chicago to Albany, by the way of Buffalo and the present Erie Canal, is equal to the navigation of a ship-canal 874 miles long.

Enlarge the Erie Canal, and it becomes equal to the navigation of a ship-canal 698 miles long.

Take the Champlain route, and it is equal to a ship-canal 683 miles long, while the Oswego route is the equal of a ship-canal 597 miles long.

That is to say, the advantages of our route are 83 miles of ship-canal navigation better than the Champlain route; they are 101 miles better than Buffalo, even with the Erie Canal enlarged to ship-canal size. And this advantage, as every one knows, is an advantage which is too large than to be otherwise than controlling, supposing that all three routes were improved, and that the business was left to seek the route which was the cheapest and the best.

There is one item which has been omitted in this calculation, and which should be mentioned, and that is the item of lockage. There is a little more lockage by this route than there is by either of the other two. There is about 200 feet of lockage more than by the Champlain route, and there is more than that in excess of the lockage by Buffalo. The entire lockage by Oswego would be 938 feet, by Montreal and Lake

Champlain 715 feet, and by Buffalo 655 feet. But the difference is best shown by the number of locks. We should have eighteen locks more.

We do not rise, when we leave here to go up to the Erie Canal, the whole distance which we sank in coming down from Lake Erie on to Lake Ontario, because a part of that distance has been lost in coming from Buffalo by the way of the Erie Canal. In coming from Lake Erie to Lake Ontario we sink 320 feet, and in going from here to the summit at Rome—to the Erie-Canal level—we rise only 181 feet, and as 10 feet is about the average of locks, it is the equivalent of eighteen locks, and that is, as you perceive, just about the difference.

We have eighteen locks more than the Buffalo, and twenty-one locks, I think, more than the Champlain route, although the number could be reduced somewhat with the construction of the new canal. Now, these eighteen locks, as Mr. McAlpine states in this same speech before the chamber of commerce—of which your chairman has a copy—are accepted substantially by engineers as the equivalent, each of them, of a mile of canal; that is, to pass through a lock involves about the trouble, inconvenience, and loss of time of moving over a mile of canal, so that when you have subtracted eighteen miles from our advantage, you have allowed for the entire difference of lockage, and you perceive that when you have done that it still leaves us a very large advantage over either of these other routes.

The route, then, is the shortest, and that necessarily brings us to the conclusion that it is the cheapest route of the three.

But your committee will find in the answers of Mr. McAlpine to the eleventh, twelfth, and thirteenth interrogatories, which were submitted to him, that the question of cost was very exhaustively analyzed and elaborated, and he arrives, by another method of calculation entirely, at a conclusion very similar to the one which I have presented.

And now with regard to these differences of cost, I will only call attention to the table found on the nineteenth page of this report. In this calculation, as before, tolls and insurance are left out of the account, it being the cost of movement, not taking into account the expense of maintaining the canal, or of building the canal, supposing that each of these water-routes is made free to the commerce passing over it. He makes the cost of carrying a ton from Chicago to New York, by Buffalo and the present Erie Canal, \$4.21; of carrying a ton over Buffalo and the Erie Canal, supposing steam to be introduced upon the Erie Canal, but the canal to be used at the present size, \$2.87; by Buffalo and the Erie Canal, supposing the Erie Canal enlarged so that 750-ton boats could be used, \$2.78; by the Caughnawaga or Champlain route, \$2.75; and by the Oneida Lake, \$2.52 per ton.

That first cost is supposing each barge used on the Oneida Lake carried with it its own motive-power, engine, machinery, &c.; but supposing that the machinery were only put upon every other barge, then the cost would be reduced to \$2.28 per ton from Chicago to New York, or six cents and eight hundred and forty-seven thousandths—a trifle less than seven cents—as the cost of moving a bushel of grain from Chicago to New York by the Oneida route.

There are other advantages, however, which our route possesses as compared with these other routes. In the first place, as compared with the Caughnawaga route, the Champlain route.

This route from Chicago to New York passes entirely over American territory, with the exception of the Welland Canal. The use of the Welland Canal is secured to us by the treaty of Washington, and that same treaty also secures to the people of Canada the right to navigate Lake

Michigan, a right of the very highest importance to them; also the right to use the Saint Marie Canal and the Saint Clair Flats Canal.

And if they should interpret the treaty, so far as we are concerned in the use of the Welland Canal, in an unfriendly spirit, or if they should infringe upon that treaty, we have in our hands the remedy, because we can withhold from them privileges which are far more important to them as a people than the use of the Welland Canal is to us as a people. The same advantage—that is, the protection which that treaty gives to the Welland Canal—also extends to the canals of the Saint Lawrence.

We have the right to use the canals of the Saint Lawrence from here to Montreal secured to us by the same treaty, and the same legislation of the Dominion Parliament, as is the use of the Welland Canal. But the Caughnawaga Canal, which is an essential part of that route—an essential link in it—is not protected by the provisions of that treaty, and if Montreal, in her anxiety to secure, as she is most anxious to secure, the concentration of the great grain-trade of the West at Montreal, should be able to induce, not the Dominion Parliament, if you please, but the Provincial Parliament of Quebec, to adopt legislation which should embarrass the navigation of that canal, we cannot claim that that action would be any infringement of the letter or the spirit of the treaty of Washington.

There is another advantage we have as compared with that route, and that is at least two weeks earlier navigation in the spring, and two weeks later navigation in the fall, and that occurring, too, at the very time when the pressure of western grain for movement is the greatest. As to my authority for this, I have had some opportunity for observation myself, for my own native county is within a few miles of the Saint Lawrence River; but I have also the word of Mr. Moses Merrick, who is known to some of your members, and who was for many years of his life very extensively engaged with his brother, Mr. Merrick, of Detroit, in the navigation of the Saint Lawrence River, those brothers having sent more oak timber probably from this country to Quebec than any other living men. Mr. Merrick tells me that this calculation, instead of being too high, is too low.

MR. WINDOM. You are making your comparison now between the present canal and the opening of the Saint Lawrence River?

MR. CHURCHILL. Between any canal from here to Albany by Oneida Lake, and any route by the way of the Caughnawaga Canal.

MR. WINDOM. You do not compare the time of opening the present canal with the Saint Lawrence River?

MR. CHURCHILL. No, sir; I compare the difference of seasons—the difference in time of opening, if you please, the port of Montreal and the port of Albany.

MR. CONKLING. You are speaking of temperature and latitude?

MR. CHURCHILL. Yes, sir.

MR. WINDOM. It is claimed that the Saint Lawrence is opened twenty days earlier, and that the season is twenty days longer, than by either of these other canals?

MR. CHURCHILL. You will find, in addition to the authority which I have quoted, unless I am very much mistaken, that in some of the tables connected with Mr. McAlpine's speech before the Chamber of Commerce of the city of New York in last May, and which was made after a very careful and friendly examination, too, of the merits of the Champlain route, certain figures there given which I think show, not

merely the difference which I have stated, but a difference of some days in addition, taking the whole year together.

Mr. WINDOM. Would you say that the time of opening and closing of the river at the head of Lake Champlain, and the actual opening and closing of your canal, would be a fair comparison?

Mr. CHURCHILL. Yes, sir. The Richelieu River and the Chamblee Canal would be a fair comparison with these routes, although at the same time, so far as the opening of our canals is concerned, that is hardly a fair test, because the Erie Canal navigation is not commenced until all our canals are ready for navigation, and particularly until Lake Erie is ready for navigation, and Lake Erie always, I believe, that is, taking the average of years, opens later than Lake Ontario. Our lake is considerably deeper than Lake Erie. It never freezes over.

And let me say, the proper comparison would not be between our canals, because they are affected by these considerations which I have just now mentioned, but it will be between the Welland Canal and the Chamblee Canal. If your secretary, who is very good at procuring statistics, will find, as he will be able very easily to find, the days of official opening of the Welland Canal and of the Chamblee Canal, I think that those two routes will show very fairly the difference. The navigation of the route from here to Albany could at any time be opened as soon as the navigation of the Welland Canal could be resumed. That could always be done.

Another advantage which our canal has, as we regard it, over the canals of the Saint Lawrence, is that it escapes the fogs of the Saint Lawrence. Any one who is familiar with the navigation of that river knows that during the entire season there is more or less detention in consequence of the heavy fogs which prevail, but this is particularly true of the spring, and of the greater part of the fall, and more particularly the latter part of the fall of the year.

Mr. WINDOM. At what point on the Saint Lawrence?

Mr. CHURCHILL. The whole distance from Cape Vincent, where we left last night, to Montreal—to the mouth of the Caughuawaga Canal. The whole distance is affected by severe fogs, which often for a considerable length of time together make navigation certainly slow, and sometimes suspend it altogether for hours.

As compared with the Buffalo or Erie Canal route, we have one very considerable advantage in the fact that that route avoids very largely, and almost entirely, the large cities and villages of this State.

In the western part of this State we have Buffalo and Lockport, Rochester, and Syracuse, a large number of cities and large villages, through which the present Erie Canal passes, and the cost of construction would be very considerably enhanced of course by the necessity of enlarging through these villages and cities, and in addition to that the embarrassment of navigation would be very considerably increased for the same reason, viz, the necessity of passing the numerous street bridges, which would have to be done.

From here to Albany, you will see to-day as you go up along the line of this canal, from here to Oneida—from here to Rome—there is not a single village of any importance where you pass through its streets, with the exception, perhaps, of the village of Fulton, and there it is only in a small part of the village, the canal taking the river-bank and leaving the street undisturbed.

Another advantage which we have is the water-supply, and to that I beg to call your particular attention, because it is a matter of very great importance of course in establishing a water-route.

The committee are aware, of course, of the fact that in the clearing up of the country the water-supply is being constantly diminished, and in establishing a route which shall relieve the necessities of the country for ages to come it is important that that route should be chosen which shall and can always supply this very essential element. We say our route has the advantage in that pre-eminently. There is no other point in the State of New York on which so much water can be thrown as upon the summit-level of this canal in the vicinity of Rome. There we have the Mohawk River, which comes down to Rome to one end of this summit-level; we have Wood Creek and Fish Creek, which is a large stream with a supply of 8,000 cubic feet per minute; we have the Black River, a very large stream, the waters of which are now brought to Rome by the Black River Canal, the principal use of which is as a feeder of our Erie Canal; and the Chenango Canal, which brings down the waters from the Chenango Hills, and whose principal use is also as a feeder for the Erie Canal. All these sources of supply are at this moment concentrated upon this level.

And that is not all. If these sources of supply for any reason should ever prove deficient, then there is the opportunity for storing up the waters of the spring and winter in reservoirs. The head-waters of the Mohawk and of Fish Creek, as well as among the Chenango Hills, furnish large tracts of country substantially valueless in their cost—almost worthless—a rough forest country—where at the minimum of expense reservoirs of any required capacity could be constructed, which would make the supply upon this route perfect for all time to come.

These are the advantages. There is one other advantage which would be furnished also, and that is the improvement it would furnish to our intercourse with Canada. The richest portion of the territory of Canada is the province of Ontario, which lies just across Lake Ontario. It is the most flourishing and most rapidly developing of those provinces, and with the richest future before it. Formerly the Upper Canadian merchants received nearly all their goods by the way of New York and Oswego, or other ports upon Lake Ontario, and their produce found its way to market across the State of New York. Now they have diverted that very largely to the route of the Saint Lawrence River; but with this improvement we could again attract to our territory the trade of this flourishing country, not only enriching the people of the State of New York, across whose territory it would pass, but restoring our commercial marine by the business it would furnish to the ships entering and leaving the port of New York.

The question may be asked, "Why does not the State of New York do this work; why call upon the General Government to do it?" The State of New York does not call upon the General Government to do it. It is the West, with its necessities, and the East, outside of our own borders, with its necessities, which call upon the General Government for the improvement of this or of some other one of these routes.

When the Erie Canal was first constructed the freight that moved upon its waters was almost exclusively the product of the State of New York. In 1837, twelve years after, western production had felt the stimulus of the Erie Canal; the amount of produce coming into existence outside the borders of our own State which reached Albany by the Erie and Oswego Canal was only one-sixth of the whole volume so reaching it; that is to say, the stuff which reached Albany by the Oswego and Erie Canal at that time, five-sixths of it was the product of the State of New York and only one-sixth of it the product of foreign territory.

Of course, then, it was New York which was benefited by the existence of these routes; but if you will look at our last canal-auditor's report you will find, so far has this been changed, that last year only one-twelfth of the freight which reached Albany by the Oswego and Erie Canal was the product of the State of New York, and eleven-twelfths of it was the product of other States, assisted on its way to market by the former expenditures of our State. And it is because it is the country, and not our State alone, which is to be benefited by the making of these routes of navigation, that the country have a right to call upon the Congress of the United States to make the expenditure necessary for it from the National Treasury, and not from the treasury of any State.

Mr. FORT. I am requested, Mr. Churchill, to call your attention to a fact which has been stated in private conversation; that these reservoirs being built, these streams, many of them, have deep ravines, which would be of benefit.

Mr. CHURCHILL. That is true. Any one who has ever been fishing up in the north woods will know what endless opportunity there is for the construction of reservoirs on the head-waters of the Black River, the Mohawk, and others, and especially in ravines, where the land is almost valueless, and where, at the least possibility of expense, such a work could be constructed.

Mr. FORT. Would it not be well for you to add a word about the improvements going on in our harbor?

Mr. CHURCHILL. Perhaps I should say one word with regard to our own harbor and our facilities for doing business.

Our present mills grind about 5,000,000 bushels of western wheat per annum. Our elevators have a capacity of elevating 600,000 bushels a day, and of discharging at the same time 600,000 bushels. In other words, they have a capacity of movement of 1,200,000 bushels a day—one-half in elevating, and the other half in discharging on board of canal-boats.

A copy of our harbor-map has been put into the hands of the clerk of your committee.

We have in our present harbor, between the lower bridge and the mouth of the river, about three miles of dockage.

The General Government is constructing an outside pier which will add about one hundred acres of deep water to our present harbor-room. About 2,600 feet, I think, of the pier has been constructed. The entire pier will be about 6,000 feet long. Nearly one-half of its length has been completed. When this harbor shall be finished, with docks and slips, it will add about four miles more to our wharfage, considerably more than doubling the present facilities of our harbor.

Mr. SHERMAN. How do the waters of the Black River descend to the Mohawk?

Mr. CHURCHILL. From Lyons Falls, upon the Black River, the Black River Canal runs through Booneville with a continuous descent to Rome, where it enters the Erie Canal. The main use of that canal is as a feeder to the Erie Canal, and it takes whatever of the waters of the Black River are required for the purposes of navigation of the Rome level from the Black River.

There is at present a single reservoir upon the head-waters of the Black River above that point over fifteen miles long. It is an artificial lake over fifteen miles long, the waters of which can be used for this purpose.

The upper waters of the Black River are largely fed from ponds or

lakes in very considerable numbers, which can easily be made reservoirs, any one of them, at no expense, or substantially no expense, for land damages, to increase the flow of water through the Black River Canal on to this level.

Adjourned.

BUFFALO, NEW YORK,
Friday, September 19, 1873.

Mr. LEWIS, of the New York State senate. Mr. Chairman: We have invited some of the commercial men of our city to meet you to make some statements touching the question which you are here to investigate. They have not prepared themselves at all elaborately, and, in fact, I think have made no preparation particularly, but they are men of large experience, who have been engaged in the transportation business for a number of years, and will make some statements to you, and will be glad to answer any questions that the committee may desire to put to them.

The CHAIRMAN. The committee are not advised upon what points they desire to address us, and, consequently, the gentlemen will make such statements as they may please.

GEORGE S. HAZARD. Mr. Chairman: I did not expect to say anything to-night really, and the lot seems to have been cast upon me to open this debate. If I thought you expected any fine-spun arguments, I should go to my seat at once.

I suppose you come here for plain matter-of-fact, and to get facts from practical men on this great subject of cheap transportation, a problem which does not seem to have been solved entirely only in the minds of some who have some particular hobby to ride. Some think it is by rail and others by water, and there may be those who think it can be done by balloon or some aerial way. But, sir, I believe we have the means of reducing the prices of transportation within our own grasp. I believe that Senator Conkling, in his remarks in Canada the other day, took the right ground, that this country is determined, and it should be the policy, to not only keep the trade within her own limits, but to grasp it all, or as much as she can, by a fair competition.

I would not disparage railroad transportation. Railroads have accomplished an infinite amount of good, and they are necessary in the economy of transportation and cannot be dispensed with; but while they are necessary, water is also necessary, and, in my opinion, the cheapest mode of transportation that can possibly be had.

We have a great line of communication here by lakes in connection with the Erie Canal. I need not go back to the history of the Erie Canal, as you are all aware that it was the first means adopted in this country really for the cheapening of transportation. It reduced the transportation of a barrel of flour or a ton of merchandise, between Albany and Buffalo, from \$70 to \$7 a ton. It has been constantly reducing the price of transportation ever since it was created. It is the great regulator of transportation in this part of the country.

The inauguration of the Erie Canal was a great event in the country. The boats then used were of small capacity. I think they carried but 175 tons or 150 tons; perhaps about 2,500 bushels of wheat was all they carried in a canal 40 feet by 4. The canal was, as you are aware, increased to 70 feet. I think there was a previous increase of the size of the canal, if I am not mistaken, but the last increase in size was 70

feet by 7, although the canal has never been made the full extent that it was designed, 70 feet by 7. It is really only 70 feet by 6, or a little over 6, admitting a boat of about 240 tons.

What we want now, is to have a canal that has three or four times the capacity of the present canal. The present canal's capacity is really for down tonnage, not over 3,000,000 tons for the season of 210 days. Perhaps the season of navigation would not be over 200 days, and some years it is only about 180. The average, probably, would not be over 200 or 205. The tonnage of down freight cannot exceed over 3,200,000 tons, from the fact that the locks will only pass a given number of boats during the twenty-four hours, and that is about 200 boats in the twenty-four hours to both locks, which will give, during the season of navigation, about 3,200,000 tons. This was the report of the constitutional convention committee in 1867. That gives 3,200,000 tons during the season of 205 days, as I said.

Now the question comes, at what rate can the owners of boats transport property upon the canal with its present class of boats? There are points below which they cannot go, and we may say that that would be about \$2.75 to \$3 a ton, to say nothing of the tolls that go to the State. That would probably be the least that any capitalist could build boats and place them upon this canal for, with the prospect of getting a fair remuneration for the amount of his investment. Now while boats get sometimes twice that for carrying property through this canal, that is simply a matter of supply and demand, but when it comes to a dull season the prices of transportation are reduced very materially. They go down to the very lowest point that boats can carry. As has been shown this season, boats have been carrying wheat from here to New York for 7 cents a bushel, when, according to the rate that I propose and that I have mentioned, \$2.75 or \$3 a ton would be 9 cents a bushel. But boats have been carrying wheat, as I say, for 7 cents a bushels over tolls, which is not a living rate. They cannot carry it for that.

Now the question arises, how are we going to provide ways and means to cheapen this transportation? The present class of boats cannot carry freight for any less than they are carrying it now. The class of boats of this size must have a fair remuneration for their tonnage for the freight from here to New York, and unless the canal is enlarged and the boats enlarged the prices must remain as they are. Therefore the solution of that question will come to an enlargement of this canal, and to an enlargement of locks sufficient to accommodate a boat of 600 or 650 tons. If that should be done I believe that boats can carry wheat from here to New York at 5 cents a bushel instead of 9 cents, and make more money than the present class of boats can at 9 cents. If the canal was enlarged steamers of 600 or 650 tons would be placed upon it, which would carry, instead of, as the present class of boats now carry, 8,000, from 20,000 to 25,000 bushels of wheat. They would make their trip in six days from here to New York. The present class of boats require twelve, which would be about as short a trip as they could make, and oftentimes fourteen and sixteen.

Therefore a large boat with the enlarged canal would be able to make two trips to one of the present class, and would carry four times—yes, six times—the quantity that the present class of boats can carry. The same principle would rule as with the large class of canal-boats that exists on the lake, and with ocean vessels, that the larger the vessels the cheaper the freight; the more they can carry, of course the cheaper transportation becomes. Our lake craft has been increasing in size for the last fifteen or twenty years. Twenty-five years ago the largest lake

craft carried only 8,000 bushels, or, at the very outside, 10,000 bushels of corn or wheat. Now we have vessels carrying 70,000 bushels, and the size of this class of vessels is limited entirely by the depth of water at certain parts of the lakes. For instance, over the Saint Clair Flats are spots where there is only about 13 feet of water, and our vessels just rub and go over there; and then, again, at the mouth of the Detroit River is another shallow place of 13 feet, called the Lime Kilns. There are vessels dragged frequently, and all they can carry is 13 or 13½ feet of water. Sometimes the wind is down the lake and depresses the water at that end of the lake, and then the vessels have to wait before they can get over those obstructions. If those obstructions were removed our vessels would be able to increase their tonnage about 200 tons for every foot of water that could be deepened at those points. Consequently transportation would be cheapened in proportion. A vessel that can carry 2,000 tons can certainly bring freight cheaper than one that can carry only 1,000, because, although the investment is larger, still the expense of handling and of running the vessel is not in proportion to the remuneration for her freight.

I have a paper here which I would like, to read in this connection, and which was handed to me by a friend, he being a little too modest himself to write:

BUFFALO, September 19, 1873.

*To the honorable the Committee of the Senate
of the United States on Routes of Transportation:*

In furtherance of the object for which your committee is constituted, the following is respectfully submitted:

Vessels engaged in the commerce of Lakes Michigan, Huron, and Erie are constructed with reference to the limit upon their draught of water in crossing Saint Clair Flats, by shallowness of water at the upper and lower ends of Lake Saint Clair, by obstructions at what are known as the "Limekilns," in Detroit River, and also at the mouth of Detroit River off Bar Point.

An examination of the charts will show that there is abundance of water at all other points from the foot of Lake Michigan to the foot of Lake Erie.

The water upon Saint Clair Flats the present season is deeper by 15 to 18 inches than it was last season, being now 14½ feet; it is about 15 feet deep over the "Limekilns," and at Bar Point it is from 17 to 18 feet deep.

The draught of water permitted at the places named is the standard adopted for dredging out the principal harbors upon the lakes.

With the present approved models for lake carrying-craft, and their dimensions, say from 220 to 240 feet keel and 38 feet beam, and with a depth of hold corresponding to such increased depth of water as may be obtained, the carrying capacity of the vessel will be increased at least 200 tons for every additional foot of water.

There are no formidable obstacles in the way of obtaining at least 5 or more feet additional depth of water at the places named. The cost would be comparatively small, the deepening of the flats and of Lake Saint Clair, where needed, being a matter of dredging soft mud; the "Limekilns," a rock excavation of less than a quarter of a mile in extent; and off Bar Point, the removal of bowlders and sunken wrecks, (if any,) and dredging a channel through gravel to deep water. The advantages resulting in the interest of cheap transportation would be very great.

The increase of depth of water at the places named would be followed, as a matter of course, at once by a corresponding increase of depth of water at the principal harbors on the lakes, and more or less extension of the piers to deeper water would be necessary at most of the harbors.

It is thought that no artificial harbors for safety would be required growing out of the proposed increase in depth of water, the present natural harbors, and the artificial one now about being constructed by the United States Government on Lake Huron, being all-sufficient, so far as respects draught of water.

The time of your committee will not be taken up with any elaborate argument in support of this scheme, it being apparent it would at once lead to a decrease in cost of transportation, utilize to an extent quite within reasonable reach the most important natural water-channel in the country, and that channel a highway, the rates of transportation over which are regulated by the laws of supply and demand, out of the reach of monopoly, and hence a healthy and most powerful conservator.

I believe that the solution of the whole question of cheap transportation is the enlargement of the Erie Canal, whether it is to be done by State aid or by the Government aid, and I do not know any more worthy object, if the Government is to spend money in this way, than the Erie Canal. The tonnage of the Erie Canal is strictly national in its character. Nine-tenths of it is the product of other States than the State of New York. I believe last year, if I can recollect figures, that the down tonnage of the Erie Canal, the proportion from other States, was two million four hundred-odd thousand tons, while the tonnage of the State of New York was only a little over 200,000 tons; a little less than 10 per cent. So you see that the State of New York, so far as the use of the Erie Canal is concerned to them in transporting their property, is not very seriously interested. It is the avenue of a great commerce, it is true, and her people are benefited by it very much undoubtedly in the transportation, and it would be a very good thing for the people of the State of New York, undoubtedly, to have this canal enlarged, but how much better it would be for the people of other States, large groups of States, not only to the west of it, who depend upon getting their property to market at cheap rates, and for the people who live at the other end—at the East, who want cheap food—how important it is for them, more so than for the State of New York, because the products of the State of New York have to come in competition with the low-priced products of the West. Consequently, the people of the State of New York are not benefited so much by the enlargement of this canal. It is more for the people who live in other States. It is for the purpose of extending the area of production that this cheap transportation should be established. It is for extending the area of production to those great and extensive lands at the West, those vast prairies, because there is a limit which you cannot go beyond. You cannot bring corn beyond a certain limit unless you bring it a cheap rate. It does not require a great many hundred miles of transportation to use up a hundred bushels of corn.

And then you may go so far beyond the point of transportation that the farmer will prefer to burn his corn to giving ten bushels for getting one to market. In fact, a friend of mine observed to-night, he thought that the transportation ought to be cheap enough to enable the farmers certainly to save seed enough out of what they raise to plant the next year. I think so too. I think he ought to have a little more than that.

The Erie Canal certainly has exerted a most beneficial influence. The large cities at the West owe their prosperity, and I may say almost their

existence, to the Erie Canal, because it was built, and they reaped the benefit of it, before railroads were ever invented. The cities of Cleveland, Toledo, Detroit, and others, I may say Chicago, and many others that I could mention who are now the glory of this country, were started by it, and those great prairies at the West, the States of Ohio, Michigan, Indiana, and Illinois, were settled by emigrants passing through the Erie Canal. It has been the great regulator and conservator of transportation, and is now. Where would we be if we had no Erie Canal? We would be in the same condition that they are out West, where it costs 18 to 20 cents to transport a bushel of wheat from the banks of the Mississippi to Chicago or Milwaukee.

If the same rate could be obtained for transporting wheat from Buffalo to New York, the price would be 50 cents a bushel. Now it is 12; it has been 10 all the season.

If we can enlarge this canal we can reduce it to 5 cents, and everything else will have to come to the same scale, not only wheat and corn, but lumber, the product of our mining districts—the provision transported would be done proportionately cheap.

Gentlemen, I thank you for the time you have given me, and I will now give some one else an opportunity to speak.

Remarks of E. A. Prosser, of Buffalo.

Mr. Chairman, nothing surely need be said about the capacity of the waters of the West to bring all the property they have to sell here more cheaply than by any other process. That is patent, and needs no comment. So it is provided for up to this point amply, and not, I take it, to be disturbed by the land-transportation.

About all of the country north of the Ohio River may conveniently get their surplus to the lakes and by water to this place cheaper than by any other process. There has been considerable complaint, for many years wide-spread in the Western States, of excessive charges for transportation from here to the sea-board; the rate has ranged for the last few years since the large deduction in the tolls of our State, an average, I think—although I have been out of the trade for years—of about 13 cents a bushel from here to New York, and with this rate these complaints have arisen and still exist. Can the rail benefit, can the rail reduce it, is the first inquiry, because, sir, I take it we are to have within a very brief period such ample facilities by rail as to accommodate all of the trade, if it can do it cheap enough upon the completion, in addition to what we have now, of the double freight-track of the New York Central Railroad. So soon as that shall be completed and properly stocked, its capacity will be largely in excess of our canal as it is, which, with the other railroad facilities as they now are, would certainly be quite sufficient for some time to come.

But can the rail reduce the rate below 13 cents a bushel, something less than 1 cent a ton a mile, and have it remunerative? If it can, it has to do something that has never been done, as I think, on the globe. I hope it may, for if it can, then we are pretty well provided for. Yet I think that it cannot be done profitably, and hence will not be done. If the rate is to be less in the future than in the past, it must be by water from here to New York. If it is material at all that the export trade of the States shall be kept within the States, and surely it is proper that we should have such a national feeling as that—I think it is wide-spread—if it be so, we cannot prepare ourselves too soon to meet the ability of Montreal in the near future. If they are to complete the works which they have commenced, as I understand they contemplate, completing

them to a draught of 12 feet of water, and locks admitting vessels 40 feet beam by 250, if anybody wants to build so large, they will be able to reach Montreal at a very low cost additional to what it must cost us to reach Buffalo, with such moderate tolls as has been the practice upon the Canadian canals; possibly so low that it will be out of our reach; at any rate so low that we had better prepare to do our best, and that speedily.

Those more conversant than I am with what the largest class vessels, steamers more particularly, may do upon these lakes, and as to their ability to transport cheaply from Chicago here, have informed me within a few days that they really believed the business might be done at an average of 5 cents a bushel, of course fluctuating, sometimes less, sometimes more, from Chicago here by the largest-sized steamers.

The CHAIRMAN. Is that statement made by the steamboat men?

Mr. PROSSER. Yes, sir; owners of boats here. Well, sir, if that can be done, the little addition of toll to do it will not add very largely to 5 or 6 cents to deliver it at Montreal, for with a good canal navigation of only about sixty miles, she will make the distance from here to Montreal certainly quite within three days, and will not add many cents to the 5 to get here. It is too apparent to discuss. It is self-evident. With like capacity she could not have the same draught of water, but she has such ample beam and length as to very conveniently carry certainly 50,000 bushels of grain.

Now, if, as I remarked before, it is desirable to keep the export trade of this country within the States, and from the city of New York, we must go from here to the city of New York for 4 or 5 cents a bushel, to be able to put the grain on a steamer at that port as cheaply as it can be put on board of a steamer at Montreal when that route is completed. I do not believe it can be done by the rail. I think it is such a very low price that it will be generally conceded by those better conversant than I am with railway affairs latterly, that it cannot be done by the rail. Then, if it is to be done within the States, it has to be done by water. Can it be by water? For quite a number of years I have been conversant with the transportation business somewhat, considerably so for thirty years—but have been out of it for a few years—and with the canals of our State and the Hudson river somewhat, and a little upon the lakes, and have done what I could several years ago—enough to satisfy myself, and, possibly, some others, that with our canal in its present condition, it must ever be as slow as it is now. Not but what it is practicable to run steamers upon it; there is no mechanical difficulty, but it is financial difficulty. They will not pay. I constructed a couple of propellers some twelve years ago, and put in power enough, run them alone first, found they did not pay, got rid of some little imperfections in them, and hitched on two or three boats and towed them for a couple of years; but found it so full of difficulties that I came to the conclusion the business would never be done in that way. And in that way it was slow, a little faster perhaps than horse power, reaching New York in perhaps twelve days from here with a tow of boats, yet quite too slow for the times. I came to the conclusion that the business would never be done by tows of boats with any sort of power, I do not care what the power is; it is too full of difficulties.

But I found there was no trouble whatever, as has been proclaimed widespread all over the country, of wash of the banks, needing some new contrivance to prevent it, as it was thought in early days before railways, that some contrivance was necessary to prevent the wheels slipping on the rail; but it was imaginary. We found that there was

no difficulty. There is no difficulty about the wash of the banks; no sort of trouble in running canal boats by steam, but they do not pay.

Some twenty years ago, upon the Delaware and Raritan Canal, in the State of New Jersey, constructed just about the size of the Erie, and with locks only about 100 feet long, they lengthened them, enlarged them, and completed the work in one winter, and made them 24 feet beam and 220 feet in length, admitting steamers to run through there between New York and Philadelphia, varying in size from 24 feet beam and 100 keel up to, in one or two cases, 200 keel, and they found no practical difficulty in navigation. I think they are running through that canal now of dimensions as large as 24 feet beam and 160 or 180 feet in length to Baltimore. That demonstrated there that a size which I spoke of was entirely practicable in that canal of about the dimensions of ours; so through the Welland Canal they have had much experience with a beam of 26 feet and a bottom of about 60 feet, and find no practicable difficulty with that breadth of beam and as much length as the locks will permit. So that, with the experience around us, I have come to the conclusion that it is entirely practicable, with suitable locks on the Erie Canal, to run steamers with about 24 feet beam and possibly as long as 200 feet. Within those dimensions, properly constructed boats of iron frames and deck, perhaps, and I rather think plank or wood instead of iron for canal purposes, very staunch, tolerably modeled, will displace 800 tons of water in drawing 6 feet, and may be very strong and not weigh more than 200 tons themselves, thus enabling the boat to carry 600 tons; quite as much as that.

The first hundred miles from here to Rochester the canal is much larger. I may say that it is a very fair steamer navigation for vessels of that size. They can make it in twenty-four hours with tolerable ease. The next two hundred and fifty miles to Troy is narrower; the progress would be slow; I think perhaps about two and one-half miles an hour, and we then come to the Hudson River, and such steamers ought to have, at least, an eight, and possibly ten mile speed on that river, and we shall be able to reach New York with very slow speed from Rochester to Troy, in about six days with about 600 tons.

My judgment is, that boats of that size properly constructed, which would be very durable, will carry property at a cost not exceeding \$1 per ton from here to New York. A few cents per ton would afford a liberal return for the investment, so that, if I am right in this, and I am confirmed in it the more from consulting with gentlemen in New York who have run steamers between New York and Philadelphia for many years, who quite agree with me that such steamers may be run between here and New York for a dollar a ton cost, with moderate cargoes upward, which would generally be of coal. If that can be done, we bring the price down to about 4 cents a bushel, from here to New York, to which must be added whatever the State charge is. My judgment is that that ought not to be more than 1 cent a bushel, making about 5 cents.

We can then, perhaps, transfer our cargoes on to the vessels in New York as cheaply as they do at Montreal, or on the other route when they shall have finished their work, and I think not any cheaper; New York having considerable advantage in her harbor being open all the year, and the advantage of having the trade in the main now, may continue to enjoy the supremacy of it under such circumstances.

I do not know of any other method by which I think she can retain a moiety of the foreign trade long after this northern route shall have been completed as it is proposed. I do not believe it can be done.

I do not care to appear here as advocating the policy of Congress making appropriations broadcast over this country for the purpose of cheapening transportation generally; but I have to remark that if they are to do it, if it is to be done, my judgment is there is no other place within the United States where it can be accomplished with so little money. I am not unmindful that my views on this subject differ widely with many in the room; perhaps a majority of our own citizens; differ with some because, perhaps, their judgment is warped a little by the property they own; differ from some in other localities, where, perhaps, they perceive reasons why freights ought not to be cheap from here to the ocean. I think so. My desire is that the property shall go as cheap as it can be got from here to the sea-board, within this State, by whatever means. If the rail is the cheaper, by all means let us have it. Private enterprise will take care of that. I judge that there is no occasion whatever for Congress making any appropriation for a railway from here to the city of New York. As I before remarked, I think that all the public need ask for a long time to come, so far as facilities in transportation by rail is concerned, they are to have quite soon.

Many are of the opinion that boats so large as I have mentioned cannot conveniently run in our canal. Of course they could run more conveniently in wider water, and cheaper if it were deeper. It would not be a very expensive matter to add one foot of water. More than that would cost a good deal of money. Our locks are constructed to have 8 feet of water in them, and there is 7 in the channel, and the canal itself is susceptible, most of it, of carrying about a foot more water. Many levels can do it without any alterations or any expenditure, and some would require either a little excavation from the bottom of the canal or a little addition to the banks. So that, if the present depth is not sufficient to enable us, with the boats which I have indicated, to transport as cheaply as they can upon the northern route when that is completed, an additional foot of water can be obtained quite cheaply, adding something over a hundred tons to the cargo, and cheapening a little further the cost of transportation.

The cost of such a work has been very carefully estimated by our State engineer years ago, under a joint resolution of the legislature of this State. They had a year to make the estimates, and they can easily be furnished you. The subject-matter was gone over again very thoroughly in 1867, in the constitutional convention, of which I had the honor of being a member, and was upon the committee who had charge of the subject. We had before us many eminent engineers, among them Mr. McAlpin, whom, perhaps, you may have met in your travels, and went very fully into their calculations after getting them, and we came to the conclusion that about \$8,000,000 would make the necessary alterations for boats such as I have indicated to run conveniently upon the canal from here to Albany, not only, but upon the Oswego canal, and a little short one that we have leading up into our small lakes, Cayuga and Seneca. And some considerably less than this would enable the boats to run; but they would not be so well accommodated as they ought to be; for the channel has the capacity exactly as it is, without a particle of widening anywhere, to float eastern boats drawing 6 feet of water, and the ascending boats 4½.

But I suppose if Congress should make any appropriations whatever for internal improvements, and should embrace this work as one of them, if this committee should make such a recommendation, that a sum as large as \$8,000,000 or \$10,000,000 might be appropriated for the work.

Thanking you, gentlemen, for your kind attention, I will not add anything further to my remarks.

Mr. HAZARD. I should like to make one explanation in regard to this paper which I read. It was handed me by a gentleman who represents a very large vessel-interest here himself, and it is the opinion of a large body of gentlemen who are interested in vessels to a very great extent, not only here but in other places, that these improvements in the lakes, the deepening of the channel, &c., should be made, and the results would be accomplished as stated in that paper.

Mr. SHERMAN. Have you sufficient practical experience in the navigation of the lakes to tell us the causes of the rapid changes in the rates of freight in the lake-ports?

Mr. HAZARD. That depends on the supply and demand, as on the ocean. We see frequently steamers from New York get sixpence a bushel for corn; then in a week or two they get eightpence, and very soon tenpence, and soon after twelpence, which is the price now, if I am not mistaken. It depends entirely on the pressure of freight offering from the port to their places of destination.

Mr. SHERMAN. Do not these high rates of freight usually follow the harvest?

Mr. HAZARD. Yes, sir; certainly they do. In a very light harvest there would not be that pressure of freight offering, and they would be comparatively low; and then, again, sometimes there will be two or three years of low prices. Then vessels go out of existence—vessels are wrecked—very few vessels are built; there becomes a scarcity of vessels, and prices depend upon the supply and demand, not only of the tonnage to be moved, but upon the supply of vessels. If there is a scarcity of vessels and plenty of freight, of course the freights are advanced at once. It is only a few years since grain was carried from Chicago to Buffalo for 3 cents a bushel; wheat, for 3 cents a bushel. In fact, I have known corn brought here for 2½ cents, and vessel-owners very glad to get that price sooner than have the vessels lie still. Then we have had it 20 cents a bushel; 15 cents, I believe, the price is now for wheat from Chicago to Buffalo. That is a very high rate. Last year it was about 15. The year before it was still less—about 6, if I recollect right. I can give you tables at another time; I do not recollect the years now.

Mr. SHERMAN. Would it be possible in any way to fix, by concert among the owners of vessels, a maximum and a minimum?

Mr. HAZARD. I do not think it would, any more than you could fix it upon the ocean. It would depend entirely on the supply and demand. It is a question of that exclusively.

Mr. CONKLING, (to Mr. Prosser.) What do you count the advantage of New York over Montreal, in the matter of insurance?

Mr. PROSSER. I was greatly surprised, when I had occasion to look into the matter a few years ago, to find the Montreal rates as low as New York almost all the season.

Mr. CONKLING. In the spring and fall?

Mr. PROSSER. Quite as low in the spring; a little higher in the fall—late.

Mr. CONKLING. The average about the same?

Mr. PROSSER. About the same at that time; it was some years ago. I do not know how it is now.

Remarks of Mr. Alberger, of Buffalo.

Mr. Chairman and gentlemen: I very fully indorse the statements made so elaborately by the gentleman in Oswego yesterday, Mr. Churchill, in regard to what is called the Long Level.

There has occasionally been difficulty in the supply of water, but the State has made ample provision lately, and a new reservoir has been constructed and brought into use which, in the judgment of the canal authorities, now affords sufficient water. There is also, in addition, a very large living stream of water, which exertions have been made some years since to bring into use, called the Fish Creek feeder, if it was made a feeder. Upon that level there would be no question of supply. I propose generally to deal in facts and figures, and had I supposed that question would have been asked to-night I could have given exactly, from the engineer's data, the precise amount of feet per minute. It is a very large amount. I think it is 8,000 cubic feet per minute that can be discharged from that at all times.

I never heard the question raised, in my experience, in regard to the Jordan Level not being able to furnish a sufficient supply there, until yesterday in Oswego. To be sure, in 1866, I think, when we had a light supply of water throughout the State, there was some little difficulty there as well as upon the Long Level. After that, steps were taken immediately, so that I think since then there has been no difficulty in that direction. Otisco Lake has also been tapped, and from my knowledge of the condition of those lakes, and the country about there, I am well satisfied, and can say so with all confidence to the gentlemen here, that there need be no apprehension of an insufficient supply of water for the Jordan Level. If the statements are to be relied upon which were made here yesterday as regards the Long Level, I think the gentlemen can be well satisfied.

Now, while I am upon my feet, I would like to tax this committee just about five minutes.

The CHAIRMAN. Before you leave that point, are there not engineering reports giving the entire amount of water that can be produced in the whole line?

Mr. ALBERGER. I think Mr. Taylor, in his report of 1862-'63, gave us very full tables. I have the documents in my possession.

The CHAIRMAN. I will not trouble you further on that point, except to say, if you make any written statement to be submitted, I would be very much obliged if you would incorporate that statement.

Mr. ALBERGER. I have had some talk with Mr. Nimmo, who proposes to ask me some questions, and I will take pains at some future day to present some statistics of interest, I think, to the committee.

I will say there is one point that I think this committee ought to take into very serious consideration; that is this: that this Erie Canal is now the controlling element as regards the price of transportation from the East to the West; that she has, until the last three years, carried more tonnage in the 200 days of navigation than the Erie and the Central Railroads combined; that, without the Erie Canal being in an efficient working condition, these railroads would be enabled to charge the people of this State and the West just such prices as they pleased; and that the cheaper, either by the National Government or the people of the State of New York, you reduce the price of transportation upon this controlling line, you must, to a very great extent, control it upon these railroads. This seems to me the great point to be considered in this question—of having a control upon railroads.

Now it seems to me that it would be on the part of the people of this State suicidal in an extreme degree, or of the people of the West, to permit this canal to lose its power and its influence in that respect.

It is almost impossible to state, in view of the present condition of the country, and of its vast productions that are still to come—I am

speaking of the western country—how great and valuable this influence is to you. You can readily see that by none of the routes talked of can this influence be so strongly and so sensibly exercised as by this long and controlling water-route. I think this is a question of very great and serious importance.

I would like to say one word more as regards ship-canal navigation. It is pressed very much upon the people of this State that the best way to secure the commerce of the western country to the people of the State is by the construction of ship-canal. A few days since, coming up the Saint Lawrence, we scarcely saw upon the whole line of which we came by water, a single one of the white-winged messengers of commerce. Not a single sail-vessel did we see upon the entire route. Now, then, if ship-canal are to be the means by which your property is to be carried so cheaply, why have we not seen it exemplified by this long route of river and ship-canal navigation which we have just passed over? It is a positive fact, as I am assured by gentlemen who are well versed in this matter, that of all the sail-vessels who take their cargoes on in the Western States that pass through the Welland Canal, 95 per cent. transfer them into barges, and the barges are towed down to Montreal and there transferred to larger vessels, to find the way to European ports. Is not this the best possible argument to show that canal navigation is a better and a cheaper one, and better adapted to the wants of the people, than this proposed ship-canal navigation? There are many reasons why this is so. In the first place, over at the Welland Canal, which is less than thirty miles long, it takes over thirty hours to get a vessel through, and that must be under pretty favorable conditions. You saw, yourself, in coming up through those locks, that with an ordinary wind it was almost impossible to get a steamer through with any due regard to economy of speed, and this holds in a much stronger sense with sail-vessels. I had hoped that you might be able to visit the Welland Canal and see the difficulties which attend the passage of a sail-vessel through those locks and the canal. They cannot well be steered; they do not have the steerage power in shallow water. The propellers, of course, get through more readily. You cannot well judge of the economy and rapidity with which the business can be done by witnessing the transit of a propeller.

There are some other questions which bear, but I must call your attention to one more, and with that I shall leave the subject, and that is in investigating the value of the different routes you want to take into consideration how much of return cargoes do these different channels have. In Oswego I learned that no coal came by canal. It was all brought by rail, consequently the canal-boats doing business there lost that great element of return cargoes which this port possesses—a very large proportion of the coal. Had I expected to address this committee I should have known that proportion. It comes not only by canal, but a considerable ways by the Hudson River. Every pound of freight brought by canal on the return cargoes helps to pay the expense of the boat and cheapen the cost of transportation. I consider this a question of very great importance, which ought to be carefully examined.

Remarks of Mr. Cyrus Clark, of Buffalo.

Mr. Chairman: The great products of the West which have been caused by the great tide of emigration and the settlement of the Western States—I could name them, Ohio, Indiana, Illinois, Iowa, Nebraska, Minnesota, and Michigan—the products of those States have become immense, and it has been brought about

in a very few years. Those of us who have lived at an ordinary age of life have seen that country a wilderness. The people of those States begin to study economy by taking their products to market, and they have caused this investigation. I consider that this committee, appointed at the city of Washington, has been caused by the petitions of Western States to bring about something to cheapen transportation. It is wise. It is well that they have called your attention to it, and I understand now that you have visited Montreal, Ogdensburg, and other places on the river, as well as Oswego, and examined all those routes, and allowed all the citizens to bring forward their reasons for their special routes.

Now you have honored the city of Buffalo with your presence and asked us to give our reasons why we are here doing business in the way we are engaged in this transportation; why we are here in Buffalo, and what facilities Buffalo may have. We have taken you through our harbor to-day and showed you the means of discharging vessels. This morning when you arrived here there had, during the night, arrived fifteen vessels with a capacity of 45,000 bushels each. Gentlemen, I assure you those vessels are all discharged, and they will in the morning commence loading the anthracite coal from the State of Pennsylvania, and before sunset to-morrow they will leave this port loaded for the West, and in a very few days, if winds are favorable, they will arrive at your western ports, discharge their cargo, and come again.

It has been well said here by many, that no transportation by rail can compete with the natural transportation of these lakes. For instance, from Chicago to Buffalo is five hundred and thirty miles. No railroad man will tell you they can carry freight—it has never been accomplished and paid expenses—at less than 1 cent a ton a mile. Now, it is very easy for a school-boy to say what a ton of freight will cost from Chicago to Buffalo, \$5.80. It cannot be done any less. Mr. Winslow, one of the largest and oldest vessel owners on these lakes, said to me as he left the room: "I cannot stay here, but you may say for me that I can make money on my vessels in taking the anthracite coal of Pennsylvania from Buffalo to Chicago for \$1 a ton, and a return freight of 5 cents a bushel, which is about \$1.80 a ton. I can make money, and I will continue to build vessels at those rates." Although freight may be higher now, it is caused by a scarcity of vessels, created by the great demand of iron-ore to be brought from Lake Superior. That canal is to be closed early. There is a great demand for vessels to go there and bring that iron-ore off early, for they are going to shut up there very early, as you all understand. A scarcity of vessels has caused a high rate, and they are making enormous sums of money. Supply and demand is a law of trade. It will be but a very short time before Mr. Winslow, and a great many other men of the same class, will build vessels enough to supply these lakes with all the tonnage required, and, to repeat his remarks, "I can make money at \$1 a ton up freight, and \$1.80 down freight." That settles the question in regard to transportation from the West to the lower end of Lake Erie.

Now let me call your attention, you men representing the West here, to the fact that Buffalo is one great distributing point. The grain, flour, pork, and beef that arrive here does not all go to New York; it does not all go to Boston; but here is one grand distributing point. The State of Pennsylvania, with her immense anthracite coal fields, has discovered Buffalo to be the best point for them to reach to strike the water, and they are building roads here. Mr. Packer, who was a candidate for governor of the State of Pennsylvania, has built a road, and

connected it with the Erie, and he is delivering now immense quantities of anthracite coal by the New York, Erie, and also the Central, by the New York Central Railroad, and, as Mr. Alberger remarked a few minutes ago, coal came with the canal. It can be brought here cheaper by rail from the coal mines than to go to the Hudson River. They are sending their coal that way now. It is arriving here. This coal is what you western men want, you have not got the fuel, your country was a bare prairie, you cultivated it, but you want fuel, and you can exchange your products for this fuel, and the vessels will bring your grain and carry you back your coal, and Buffalo is the best point on the lakes for that purpose. It is proving itself so. There is no theory about it. It is a positive, practical thing.

Now, to prove what I say in regard to this anthracite coal, I have a little sketch, which has been handed to me this evening, that in 1863 the receipts of coal to this town were 130,000 tons; in 1864, 150,000 tons; in 1865, 180,000 tons; in 1866, 200,000 tons; in 1867, 240,000 tons; in 1868, 260,000 tons; in 1869, 228,000 tons; in 1870, 320,000 tons; in 1871, 350,000 tons; in 1872, 425,000 tons, and, as the coal has arrived here, to estimate the season through, 600,000 tons this year.

Vessel men will tell you that, if they are sure of a return freight, they can bring the grain from the West to this port at a much cheaper rate. The secretary of the board of trade has corrected me. These figures are the amount of coal shipped from here by vessels over and above what is consumed here.

Another thing in regard to this western business. A great deal has been said about the Erie Canal, and very well said. But does it make any difference to you gentlemen of the West when your property arrives in Buffalo, if not met here with a proper sale—and a large amount of your western produce is sold here, distributed through Pennsylvania and all the States, Rochester Mills, Black Rock Mills. Not only that, but this season your corn that you did not burn last winter has come in here in immense quantities, and, unfortunately for you, and still more unfortunately for us who have bought it, it has come here in an unsound condition, liable to heat. It has come here warm in vessels. If it goes on to the canal-boats, the sun shining right down on the top of these flat-bottom boats, has had the effect of heating it to such an extent that very large losses have been made. It has been sold in New York at almost the prices at which it sold in Chicago, in consequence of heating, a thing that nobody can prevent. Well, what is the relief? Railroads. Corn arriving here by your vessels, and taken into our elevators and passed through a blowing process that we have, and put upon the cars, is in New York in forty-eight hours, and sold at the top of the market. That shows the advantage of railroads, together with the canals. They co-operate with each other, and railroads are as much benefit to the West as the canal is.

And what has been the wisdom and what shows itself to be the wisdom of this man Vanderbilt? He sees these things, and, although he has a double track now running from New York to this port to take off this grain liable to heat on canal-boats, yet he is going to double his capacity. He shows wisdom in doing it. It helps the West. They are benefited by that process, and it will add to the value of their property on its arrival at Buffalo. So with the New York and Erie Railroad; they are largely increasing their facilities. You visited the Niagara elevator this morning. Seven hundred thousand bushels of that corn I spoke of as being in danger of spoiling if put on canal-boats has gone over the Erie Railroad to New York,

and brought the top of the market. I tell you what I know, for I have been a large dealer in it myself. Such are the facts. Buffalo itself has built a railroad connecting the Pennsylvania Central at Emporium. She is bringing in that large amount of not only anthracite, but bituminous coal. By that connection with the Pennsylvania Central she can send grain from Buffalo to Philadelphia and New York both. That affects your western people. That shows why Buffalo is of great advantage to you. Besides this road I spoke of, the Buffalo, New York and Philadelphia road, we have the New York and Erie road, with its large capacity; we have the Central road as it is, and to have two tracks more; we have all those advantages and the Erie Canal to boot.

Now, I ask you, gentlemen, you western men, have you met any place where you can send your produce at a better point than the city of Buffalo?

MR. CONKLING. How much further is it from Buffalo to New York by the Pennsylvania road than from Buffalo to New York by the Erie road?

MR. CLARK. There is very little difference, I understand. I am not positive.

A VOICE. Thirty-four miles.

THE CHAIRMAN. I want to ask you a question about this heat in corn. Do you know, in the case of corn starting from here in the same condition by canal and by railroad, which commands the best price at New York?

MR. CLARK. The heating process this year has lasted from the opening of navigation up to within two weeks. It is not always so. Last year your corn did not heat; it matured in the fields—that is, the 1871 crop. But your 1872 crop did not mature in the fields, and those who have bought it and taken it to market, where it has gone through the Erie Canal, have lost immensely.

THE CHAIRMAN. I have been informed that the purchasers in New York, without examination, will pay a higher price for corn brought by rail from here than for corn brought by canal. Do you know if there is any truth in it?

MR. CLARK. During the season of heating, no other time. I mean during the first three months of this year.

MR. CONKLING. Or of any other year?

MR. CLARK. Any other year when the corn comes forward in a bad condition. The crop of 1870 and the crop of 1871 did not heat; but the crop of 1872 has heated enormously, except that shipped by rail, and that has not lost at all.

THE CHAIRMAN. What is the effect of the heat of the drying process upon corn? Does it injure it in any way? I believe you have a drying process here?

MR. CLARK. We have a good many. Corn, in my opinion, never returns to its mother goodness. Kiln-dried corn always has a smell to it. I never have had any dried yet but what had a smell to it. But there are some times when after it is kiln-dried it brings pretty near the top of the market; the reduction of shrinkage, in consequence of the taking of that water out of that corn, is a very great loss.

THE CHAIRMAN. Do you know about what that reduction is in pounds?

MR. CLARK. From 5 to 10 per cent.

MR. CONKLING. In measure or weight?

MR. CLARK. Both.

MR. CONKLING. Is the reduction in measure and weight about the same?

Mr. CLARK. We do not measure at all. Our grain is all handled by weight.

Mr. CONKLING. I know that, sir, but I speak of the bulk it occupies.

Mr. CLARK. The bulk it occupies is probably nearly the same, but the weight is reduced very much.

The CHAIRMAN. What is the expense of the drying process per bushel usually?

Mr. CLARK. About 3 cents.

Mr. SHERMAN. I should like to ask you what is the price of transporting coal per ton now to Chicago from here?

Mr. CLARK. About \$1.25 since freights have got up so high, but they take it sometimes for half a dollar.

Mr. SHERMAN. How many tons are there in a vessel that carries 45,000 bushels; about 1,300, I believe, are there not?

Mr. CLARK. Yes, sir. They do not usually load their vessels on return freights so heavily as they do on other freight.

Mr. SHERMAN. Then, a vessel carrying 45,000 bushels eastward, and returning with a load of 1,300 tons in coal, would, if I am correct, receive for the round trip about \$8,000?

Mr. CLARK. Yes, sir.

Mr. SHERMAN. What would be the cost of that trip without counting interest?

Mr. CLARK. I would have to answer you by giving you Mr. Winslow's statement again. He says there is money in that.

Mr. SHERMAN. Can you suggest any way of preventing this rapid advance in the price of freight beyond a reasonable limit on the lake, except by competition and the building of vessels?

Mr. CLARK. I cannot. What has caused the present scarcity of vessels is the great demand to bring forward the ore from Lake Superior.

Mr. SHERMAN. Would it be possible to organize an association so as to prevent this advance of price?

Mr. CLARK. No, sir; it has been tried here. We have had two very large incorporated companies here for transportation, and they both failed. Three, I think, indeed. One does still live. I speak of the Western Transportation Company. We had the Western Transportation Company, the Lake Navigation Company, and the American Transportation Company.

Mr. SHERMAN. Was not that rather to form minimum prices?

Mr. CLARK. No, sir; they went in to make money and get the best price they could. The supply and demand seems to regulate these prices.

I have one thing more to say, gentlemen, in regard to our city.

Mr. SHERMAN. Let me ask you first one more question. Have you known of any shipment of wheat or of corn produced west of the Mississippi River coming to this port?

Mr. CLARK. Very large amounts. We are receiving corn now from Nebraska in large amounts.

Mr. SHERMAN. Do you know the rates of railroad transportation?

Mr. CLARK. No, sir; I do not know anything about that. I was once interested in railroad-freight, but I do not know anything about it.

I want to say one more word in regard to Buffalo, as to the facilities for handling property, in regard to our elevators. We have about thirty elevators. Now, vessels leaving Chicago and Milwaukee, for instance, one leaves on Monday with a fair wind, and another leaves on Tuesday with a fair wind, and so each day in the week. By the course of the winds those seven vessels may all arrive in this port together. Ex-

perienced navigators will tell you that. Consequently, when we have a strong wind for forty-eight hours we have a hundred vessels here all coming in in fleets. Our great facilities for handling this grain are such that we can take it out, put it into our elevators, store it five days free, and it gives ample time for the canal-boats to arrive here and take it off, and the vessels are unloaded and gone, so that those vessels are not detained here as they would be if they attempted to go through the Welland Canal. A fleet arriving there have to take their turn in passing those locks, one at a time; but we can unload thirty at a time, showing the advantage of this port and the great advantage to the Erie Canal, because her boats have got to go steady on account of the locks. They lock every ten or fifteen minutes. They do not come in fleets; so that by holding the grain in store at a very low rate, we grant more facilities to your western produce.

The CHAIRMAN. Can you inform us whether any one here would be willing to give us, or can give us, the detailed expenses of a round trip, taking it through the year, so that we can get the average expense for each trip during the year?

Mr. CLARK. Yes, sir. I do not think it can be given to you this evening, but we have a great many men here who will be able to give it to you, and I think our secretary of the Board of Trade will be very glad to do so.

Mr. State Senator LEWIS. Mr. Chairman, there will be no speech from me, but I desire, on the part of the committee of which I have the honor of being chairman, to say that it was appointed by the legislature when they learned of the appointment of your committee and of the important duties that would devolve upon you, and believing that your observation would lead you to the conclusion that the State of New York was really the territory across which this commerce must pass in order to get to tide-water. This committee, consisting of five senators and nine members of the assembly—although all of them have not put in an appearance here—was appointed to visit you when you reached our State, and to afford you such facilities as lie in our power to investigate the advantages of this State. We have been with you now for five days, and I desire, on behalf of the committee, to thank you for your courtesy and kindness to us. It has, so far as I am concerned—and I express the sentiments of the committee—been a time of pleasure and of profit to us. And I desire to repeat what I said before, that, in my limited experience, I have never known a committee who were as willing, and who did expend so much time and labor in so short a time in pursuing the duties devolving upon them.

Now, I desire further to say, that, after being appointed chairman of this committee, I consulted somewhat with the commercial gentlemen of this city, with a view of presenting to you some statistics touching the question that would be investigated by you.

I have not yet succeeded in getting those figures in the proper shape to present them to you, and after the experience that I have had during this week listening, as we all did, to the elaborate preparations of the Montreal route and our Oswego friends, I desire to have our friends here in Buffalo prepare a statement in writing, which may be perhaps printed, and which we will furnish to the committee any time, so that you can avail yourselves of it.

I desire to add one thing further and then I am done. We believe here in Buffalo—and my friends of the legislative committee will excuse me for talking a little about Buffalo—that nature intended that this should be the outlet of the commerce coming down the lakes. The com-

mercial people of the country have thought so, and they have used it and are using the facilities of this city to carry on their commerce from the West to the East. Our railroad friends in an early day attempted to avoid this city.

The Erie Railway when it was constructed had its western terminus at Dunkirk. They soon ascertained that they had made a great blunder, and changed to the city of Buffalo. The Midland road that is now in process of construction to this city was constructed running to Oswego. They ascertained upon their arrival at that town that they had made a mistake and that the road could not succeed having its terminus in the city of Oswego, and hence they at once set about running a line to the city of Buffalo. It was so with the Canadian roads. They undertook to avoid it. They have, every one of them, I believe, changed, and are now running to the city of Buffalo a branch. We have to-day in operation, and projected, as I am told, thirteen railroads centering in this city. So far as my investigations have gone—I am not a commercial gentleman, but I have conversed with a good many commercial gentlemen, and I will say that they entertain various views upon the subject, but the balance of the opinion of the commercial men of this city is that the grain must be brought down the lakes; that the railroads cannot in any way compete with the lakes, and that in a few years the grain is to come down the lakes in large boats. Some think certainly they will carry at least 100,000 bushels in one load.

A VOICE. It has already been done.

Mr. LEWIS. You saw to-day a vessel, the "Tonawanda," that will carry 78,000 bushels. It is hard to ascertain exactly these gentlemen's views, because it is their interest not to have the idea prevail that they are making too large profits, hence they do not put down the price really where it ought to be. In my judgment that is not of very much account, so far as my experience is concerned; but, in my judgment, from conversation with these gentlemen, considering the return cargo that they get that substantially pays the expense of the trip, they can carry grain from Chicago to Buffalo and make a handsome living profit at 3 cents a bushel, and I believe the time will come, and that pretty soon, when they will be compelled to do it by competition at those figures.

Now, the only question that is left is how it shall be got to the city of New York; for I take it, as Americans and as citizens of the United States, we would prefer that it should land in the city of New York rather than in the city of Montreal. There are various views in reference to that subject. Some think we should have a ship-canal; others think that all we need is the improvement of the Erie Canal, making it a little more capacious so far as the depth of water is concerned, and the enlargement of the locks and the introduction of steam, and that will be the solution of the difficulty.

We witnessed to-day an exhibition of the cable towage. That has been in successful operation in Europe for many years. I believe that it can be operated upon the Erie Canal successfully, and what we need is a depth of water still with 8 or 9 feet and the enlargement of the locks—because it is the ability to lock through these vessels that determines the capacity of the canal—and the introduction of steam upon the canal, and then I believe that the thing is about completed.

You all know that a few years ago the State offered a premium of \$100,000 for the solution of this question of the navigation of the canal by steamer. It has set at work a great many inventors, and they have produced all sorts of boats. They have not yet, perhaps, got exactly the boat, but they are going to reach it, in my judgment, very soon.

When the steam is introduced upon the canal then we shall get the speed requisite, and that is about the only thing there is left. If the locks are enlarged, then the capacity of the canal will be enlarged. If the locks are double, the capacity will be double.

If we can increase the speed by steam I believe that grain can be carried from the city of Chicago to the city of New York, and afford a fair living profit, for 10 cents a bushel, particularly if the State will be sufficiently wise to reduce the tolls, and there are amendments now pending which, if adopted, will reduce the tolls to the lowest figures that they can be reduced and pay sufficient to keep the canal in repair. If that is done it is certainly the cheapest transportation that the world has ever known anything about.

The great difficulties, in my judgment, and I believe your investigations will show it, do not arise in our neighborhood. They are out West. They are in Chicago. Their charges there are enormous, and they are in the city of New York, arising from their want of facilities in handling grain and putting it on board of vessels for Europe. It seems to me, with all due deference to my friends at Oswego, that there cannot be any doubt that the Erie Canal is to be the great regulator of our commerce, and if the Government is to expend any money in improving any of these water-channels they would be very unwise if they did not expend it here. If it should be expended in making a ship-canal from Oswego, then you are at a point where they have no railroads. I believe they have but one, and that is in the hands of a receiver.

But I do not wish to detain you. This question is a very important one, and I shall look with very great interest to the report of this committee, and to the action that Congress shall take upon your report.

The CHAIRMAN. Mr. Chairman: Presuming that when we separate to-night, our official relations, which have been so very pleasant during the past week, will terminate, especially as two members of our committee propose leaving for their homes this evening, I cannot permit this meeting to close without a single word which shall be expressive of the thanks of the Senate committee to the legislative committee of the State of New York. Through their generosity, kindness and courtesy, we have passed the week very pleasantly. Through the facilities which they have afforded us we have been enabled to obtain very much information that otherwise would not have been within our reach. I wish to express to that committee the sincere thanks of the committee which I represent for all these offices so kindly shown to us, and in conclusion would only say, that if, when you come to consider the question of the enlargement of your channels of commerce through this Empire State of the Union, you shall gauge their dimensions by the large-heartedness shown to us in this State, the overflowing granaries of the West will have ample facilities for reaching the East.

The committee here adjourned.

NIAGARA FALLS, NEW YORK,
Monday, September 22, 1873.

WILLIAM HOTCHKISS, Lewiston, New York. Mr. Chairman and gentlemen of the senatorial committee: I had thought to make some remarks to you on the subject of this canal, but inasmuch as your time is so much occupied I have concluded that perhaps it would be quite as well to present the documents that I have here, which open the whole

subject and touch upon it more thoroughly, perhaps, than I could if I should attempt to elucidate the subject myself. There is a pamphlet upon the subject of the Niagara Falls Ship-Canal. It purports to be a criticism of Colonel Blunt's system, a new system presented and advocated by Mr. Blunt, in favor of the increased size of locks to be employed on the Niagara Ship-Canal. By perusal at your leisure, that would probably fully present the subject as well as for me to detain you by reading it and reciting the contents. I have the honor to present another pamphlet also, upon the same subject, and it would perhaps be quite as well to present those for your perusal at your own leisure without occupying your time and attention here, and I will not take up the time that other gentlemen might be disposed to occupy in any remarks that they may choose to make.

Mr. NORWOOD. You informed us that you had some documents or profiles which you wished to present; are they here?

Mr. HOTCHKISS. I will have them presented to the committee.

The documents referred to were presented by Mr. Hotchkiss and explained by him to the committee.

Report of Mr. Blackwell, engineer, was here read by Mr. Hotchkiss, as follows:

Gentlemen, I have completed my examinations for a canal from the mouth of Gill Creek to the brow of the mountain-ridge near Lewiston. Herewith inclose you the estimate.

The following dimensions were assumed in making the estimate, namely, where the cutting is entirely earth, the width of canal to be 16 feet on the bottom, with slopes $1\frac{1}{2}$ feet horizontal to 1 foot perpendicular, and where they are rock the canal to be 22 feet wide on the bottom with its slopes perpendicular to the top of the rock, and then the slope of the earth to be the same as above mentioned for entirely earth cuttings, with a depth of 4 feet of water for the whole length of the canal. With these dimensions, by substituting them in the formula of Eytelwein, which was adopted by the Erie Canal engineers in the year 1849, for their calculations of the flow of water, we shall have 12,300 cubic feet of water flowing through any one section of the canal per minute, which is equal to 280 horse-power for every 15 feet fall, assuming 320 feet fall from the surface of the water in the canal at the brow of the mountain to the surface of the water in the Niagara River at Lewiston, and, by a judicious location and expenditure of the quantity of water after making the necessary models of the power thus obtained, the traction thus obtained will equal 5,000 horse-power. In making up this estimate I have assumed for a basis the price of common labor at \$1 a day. Were common labor to recede to what has been considered its standard price on public works for many years, namely, 75 cents per day, I should consider this work at \$170,000 more favorable for construction than at the present estimate with labor at \$1 per day.

Mr. NORWOOD. What year was that estimate made in; what is the date of that report?

Mr. HOTCHKISS. Eighteen hundred and fifty-one. To proceed with the reading of the report:

From the Devil's Hole to the brow of the mountain there frequently occurs fissures in the rock. Through these there would be a continual wastage of water unless they were closed. The best means of preventing this escape would be by using concrete masonry. This item of expense you will notice has not been embraced in the estimate, as I had not the means of arriving at it with any degree of accuracy; but I do not think it will prove an item of much magnitude.

That was the report that was made by Mr. Blackwell in furnishing this profile or map.

Remarks of Hon. John. T. Bush, of Clifton, Ontario.

Mr. BUSH. I will say to you, gentlemen, that, while I reside in Canada, it has been but temporary, and my greater interest is in the States. But I am in no way interested whatever, except the general interest everybody has in reference to this canal. I think I am as impartial as

you and not affected by local interest in any respect. We have the Welland Canal on our side of the river. It is twenty-eight miles long, and what I am going to mention to you is, I think, somewhat of an argument in favor of the construction of this canal. That canal does, even now, one-half as much business as the Erie Canal. Alongside of that canal runs a railroad, and last year they carried over between 24,000,000 and 25,000,000 of bushels of wheat.

Mr. NORWOOD. Do you mean the canal?

Mr. BUSH. The railway in addition to the canal. Vessels coming down the lake too large to pass through this small canal, which bears but a vessel of about 600 tons burden, unloaded, and their grain has been put upon the railway, and carried across to Lake Ontario. That canal was begun in 1829, principally by Americans, with a very small subscription on the other side, and I came out with Mr. Yates so early as 1830, when a boy, at the time that propositions were made on the part of the colonial government to purchase it. I think he sold that canal at that time for about \$300. They have expended to the amount of, I think, about \$15,000,000—the colonial government has—and made it large enough to bear vessels of from four to six hundred tons burden. Four thousand vessels passed over that canal—not different vessels, but trips—this last season.

Now, if the Erie Canal could serve the West, and almost every bushel of grain, and every barrel of flour, and almost the entire freight is from the West that passes over that Welland Canal—not a hundred tons from the Canadas—now, if so large a proportion of the freight of these lakes may be diverted over a canal of twenty-eight miles in length, what would be the result if we had a canal of only seven miles long? The three towns bordering here urged me to go on to Ottawa, waking up very late, just before the letting of the contracts for the enlargement of the Welland Canal. I got on to Ottawa the day before the contracts were to be let, and I presented an argument before the board of public works, constituting the executive department of the government. It was simply the facts which were furnished to me, but they were so strong and convincing that, although the contractors were there urging the letting of their contracts, notwithstanding that, the government unanimously determined to put those proposals into the safe and retain them until they could appoint engineers to go and survey the feasibility of a canal from Chippewa to Queenstown, a distance of nine miles. They appointed Mr. McAlpine and two others to make that examination and survey, and the result was the deferring of the letting of the contracts for three months, and from what those men said to me I am satisfied that every one of them thought it the interest of Canada, and I think every intelligent man who had investigated the subject would say that it was the interest of Canada, to have constructed this short canal.

But there were great obstacles, greater than you have to encounter. In the survey it was found for quite a long distance opposite here they would have to excavate more than eighty feet, principally rock excavation for a certain distance. But, notwithstanding all that, still I think the government would have been determined as a matter of interest to Canada to have constructed this large canal instead of enlarging the Welland Canal if it had not been for the fact that the government was almost equally poised between the opposition and the party in power, and they could not spare three members who lived along the line of that canal, for along the line of twenty-eight miles of canal there have grown up about ten villages, one 10,000 or 15,000 population, where two members reside, and, if business had been diverted by the construction

of this canal from Chippewa to Queenstown, they probably would have lost the influence of these two members, and very likely would have been thrown into a minority.

Now what will be the result of the enlargement of that canal? If within the last ten years there has been diverted there so large an amount of produce that has gone down to the Atlantic; if it has increased the shipping to about, I think, three vessels leaving Montreal now daily for Liverpool; if it has increased the amount of commerce or the amount of receipts from about \$10,000,000 to \$17,000,000, what will be the result when they come to enlarge that canal? You may say, "If they enlarge that canal that will answer our purpose." Not so, gentlemen, I think. When this question was agitated the board of trade of Oswego, Cleveland, and of half a dozen places up the lake, all wrote me letters to send on resolutions urging the shortest possible canal. They said, "Give us the least detention that you possibly can in the canal." It takes three days to get through the canal of twenty-eight miles. We said, and we proved, I think, satisfactorily, that a vessel could pass through this nine-miles canal in one day. Now the difference, I calculate, amounts even in those vessels of 600 tons burden—the expense properly computed upon the interest of the cargo, the interest of the vessel, the expense of hands, and the towing and tugging—to about \$100 a day. And if you can save \$200 on the passage of a vessel from Lake Erie to Lake Ontario, on 4,000 vessels how many thousand do you save? I think about \$1,200,000. That is a very considerable item. And it is proper to compute the actual value of the vessel, and the interest upon that value, and the interest upon the cargo, and the expense of the hands, fuel, &c.

Now our Buffalo friends have presented, I presume, every argument against it, and I want to say one word to caution you against their having too great an influence. They have educated themselves—not the wisest men of Buffalo, but a class of men, began to educate themselves—to the idea that they must oppose every project of navigation that did not run along the Erie Canal; and they have made it so popular that wiser heads than politicians' have yielded to it, and not the good sense of the locality. You cannot make that canal serve the West; it is impossible. That canal could do to-day double the amount of business that it has done. I do not speak, gentlemen, from mere superficial knowledge; but I lived in Buffalo many years, and was a representative some years, and examined it, and was urged to say much that I thought was impolitic to say. Their interest is the interest of the West. They may ask you to give them \$8,000,000 for the enlargement of their locks, and it will not reduce the cost of transportation one penny on a bushel.

Now I understand your mission to be this, gentlemen: You are seeking to find—and to put an end to this question for all future time if you can—to find a channel of navigation that will so cheapen commerce as to furnish an adequate market to the great West. They will have that. They are, in that section of the country, now the preponderating power, and they will be the overwhelming power in less than fifty years; and when they come to that they will insist upon the cheapest possible route to the Atlantic, whether it is to Montreal or whether it is to New York. They will have it; and that you comprehend better than I do, for you know the West. One of your number, I know, knows it well.

It is a matter of interest now to the East if you can cheapen navigation so as to give an additional price to the farmer of the West. You furnish the produce to the Eastern man cheaper, and he is satisfied.

The great staple object, I suppose, of the West will be in a few years

the growing of Indian corn. It grows almost spontaneously there. Now, when you get to Chicago, you will find that sound, judicious commercial men will tell you, as they told me, that if you will make a channel of communication that will bear a vessel of 1,000 tons burden through the shortest possible canal, they can carry Indian corn from Chicago and land it alongside an ocean-bound vessel at Montreal for 9 cents a bushel. They will tell you so; they told me so, many of them. Suppose, for instance, that it cost 10 cents to get the Indian corn from the interior of your State and over the adjacent States to Chicago, Milwaukee, and to the different ports there. It is delivered on the side of the ocean for 18 cents. It is transferred for 5 or 6 cents to Liverpool, and what is the result? It makes every bushel of corn to a man in the remote part of Minnesota worth 28 to 30 cents a bushel. It doubles the value of every acre of land of Illinois, of Minnesota, and of all the five or six of those States, because the corn then becomes the most profitable; and you are doing an act of philanthropy if you can accomplish that object to the Europeans. They want bread that they will have to buy. A reasonable rate will be at a lower price than could be offered by any competition to-day, and highly better than that brown bread they have got there. Now you can, with five of those Western States, feed almost entirely all Europe, excepting the more wealthy class, with Indian corn—Ireland, Germany, and even France and England. Is not that object desirable?

These remarks I know are generally submitted to such men as you, but is it not a great object to accomplish? It seems to me it is.

Should any local interest, should New York itself, say to the West, "You shall be confined to this little narrow channel, and so taxed by monopolies that you cannot afford to sell your corn and send it through to Europe; you must burn it?" That is the result. The vessels on the lake are owned by combinations; the canal-boats are owned by combinations.

I see by the paper that a vessel that will carry 70,000 tons has charged \$10,500 to bring a load of grain from Chicago to Buffalo. Is not that exorbitant? Is it not outrageous? Talk about railroads; it is worse than railroads anywhere. Ten thousand five hundred dollars; not taking into view the returning freight! Now this should be obviated. How can you do it? The public has no friend, the West has no friend except its competition. It is proposed, I see, that you should make a recommendation to appropriate \$8,000,000 for the enlargement of the locks, and have a kind of copartnership between the General Government and the State of New York. That will not work well, and I do not believe you will approve of it, but if you appropriate that, the West will not be benefited one single dollar, and you must make valuable and available these lakes. You can transport on these lakes very cheaply.

The argument is, "Oh, you would benefit Montreal." Well, Mr. John Young, whom you have heard, and I presume know, has been just as zealous an advocate as any for the construction of a canal from Caughnawaga across to Lake Champlain, and if they want to protect the city of New York let them make the appropriation again. The city of New York, I believe, made the appropriation for the construction, or the enlargement, of a ship-canal from Whitehall to Fort Edward, of about twenty miles, proposing to dam the Hudson River, and improve navigation so that the trade might be diverted. Probably the monopoly interest of New York will control the grain in that way, probably a larger proportion will go to New York than to Montreal. But the West do not care what port they have, nor are they bound to regard what port they

go to. They say, "Give us a market for the work of our labor; let our corn go on to market; let our wheat be cheapened to market; let us supply Europe if we can." That is the true policy, the enlarged policy, the just policy of the Government. And there is no way to do it so cheaply as across these little peninsulas here. That \$8,000,000 would make the canal across here. It would be a free canal. The people of Canada will enlarge, and they are now enlarging, those three short canals to Montreal. Then if New York wants to secure to itself the trade, let them build the Caughnawaga Canal across Lake Champlain. Now, is not that right and fair?

I saw in the paper that they took you on a tug down the river to Tonawanda, and then back again as far as Black Rock. I do not mean to insinuate that they told you that we could not get up against that current, but I have seen one instance that an engineer had the audacity to say it was nine miles an hour. Why, from the precipice of that falls up to the length of this river it does not run nine miles an hour. It does not run to exceed four miles an hour at Black Rock, and it is a poor steamer that cannot navigate against a current of four miles. It is an objection to sailing-vessels I admit, but for thirty or forty years steamboats have run down loaded, and loaded back to Chippewa. Several hundred come down to Tonawanda and go back laden. They can overcome it. Propellers can do it, and I suppose that the large proportion of the commerce of the West very soon is to be done almost exclusively by propellers.

Now suppose you construct this canal, sailing-vessels say, "We cannot go up against this current, but the propeller can." Let the sailing-vessels go up the Welland Canal. A large proportion of the freighting is done, I think, by propellers, and in the future is to be done almost exclusively by them. Well, make this canal now of eight miles, which will not cost more than the enlargement of the locks, and you will secure a cheap navigation to Montreal; and if New York, in connection with Canada, will make connection so as to let those vessels go through to the city of New York, very well. That is their interest; that the State of New York proposes to do, that Canada is willing to do on her part. But it should be a free canal.

Now these remarks, for I have had no time to think on this subject, are about all I have to say to you, and they have all, I have no doubt, been said to you before, but you will find in Chicago, where they are seeking just the object you are seeking, for let me say I think it entirely impolitic and impracticable to build a ship-canal from Oswego to Albany. They never will secure the freighting that way. I should be happy if Buffalo and Oswego would prosper, and be happy to have an enlarged canal the whole length, but you never can cheapen navigation through the Erie Canal. It is out of the power of man. They have been talking about it for thirty years, and you see but very little change. They say the canal has not the ability. There is not a single man on the line of that canal but what knows it could do double the amount of business it ever has done, and yet produce will not go over it because of the expense and delay. That is a great consideration. You economize in regard to time by building this canal and connecting these lakes most wonderfully, at least three or four days from Chicago to the tide-water. You economize wonderfully in reference to cheapness.

Now, Buffalo ought not to be opposed to this measure, and I would be glad to talk to you on this subject. I know it is not their interest to oppose it. Do they want the business to leave them forty-eight miles above Buffalo, and go across to the Welland Canal? In less than two

years you will find more freight through that Welland than through the Erie Canal. Would it not be better for them to have all this freight come down to the foot of the lake, and then change, or settle in port and go down the river on its way to the ocean? Is not that for the interest of Buffalo? It seems to me so. Even selfishness would prompt that course, I think. You folks West will not be satisfied with that twenty-eight miles of canal, and yet it will do more business than the Erie Canal in less than two years.

Another consideration, I will say to you, is this: I live in Canada, and am very familiar with the people and the officials there. I expect that in less than ten years it will be a part of your Government, and if Buffalo pertinaciously opposes this canal, if all the line of the Erie Canal, including my friend Mr. Conkling, and all up oppose any cheaper canal, but wish to confine you to the West through this Erie Canal, what will be the result? In less than ten years, in my opinion, that government will be attached to yours. First it will be an independent government, and I do not think there is hardly an intelligent man in Canada who does not desire it, and hardly an officeholder who has not expressed his conviction that it must occur, from the highest to the lowest. But just now it is not policy to agitate it, parties are so equally divided. There are a certain class of old fogies from England who are opposed to it, and if either party adopted it that class of persons would go against it and give the preponderance to the other. But when it is made an issue and a party issue, I am fully satisfied that the people of Canada will vote, first for independence, and next for annexation. Then Buffalo may be left out in the cold, because they may construct the Georgian Canal, and several other canals connecting with the Ottawa River, making a short route then to the Atlantic. Then New York may lose, and Buffalo lose, and Oswego lose, and all along the line of the canal may lose business, and yet the West be the gainer.

The CHAIRMAN. One question, sir, on which I would like your opinion. You spoke of the combination of the vessels on the lakes being the great difficulty now. Would that be obviated to any extent by the construction of this canal?

Mr. BUSH. By competition. When you can load a vessel of 1,000 or 1,500 tons they can go right on to Montreal, and, if they please, across the Atlantic. A gentleman has said they cannot cross the Atlantic, but I say yes. The propellers are identical in form with the ocean vessels, just precisely; they can cross the Atlantic, and twenty years ago a vessel that carried 1,500 tons was a very respectable size to do so.

The CHAIRMAN. In your judgment, then, the number of vessels would be increased?

Mr. BUSH. O, wonderfully. You would stimulate the people to competition in Montreal and in New York, and they would have their different lines, and that would reduce it. Now it is a combination. They have a regular organization. We complain of the organization of the laboring men and mechanics. It is just as bad, exactly, with the commercial men. They have their corporations and combinations there. Why, it is obvious, it is in the very proposition that Mr. Prosser made to you, that a vessel carrying 75,000 bushels of grain, loaded instantaneously into the vessel and unloaded in an equal length of time, would carry for 15 cents a bushel just one way. Is not that extravagant?

Mr. NORWOOD. Do you know the cost of the vessel—the capital that is invested in it?

Mr. BUSH. I do not know about that one to which he refers, but they have just recently built one of the very largest at Tonawanda at a cost

of \$75,000, I believe. I do not believe there is a propeller costing over \$100,000; and if they can make \$10,000 carrying one way certainly they have freight back. It is the very best stock you could get. And the reason is all those men have grown rich who are connected with these commercial operations there, and consequently they do not want any competition.

Now they will tell you in Chicago—as fair men as in Buffalo or anywhere else—that corn can be carried to Montreal for 9 cents a bushel, and that will give to the farmer in the West a fair compensation for his grain. He will not burn it then.

The CHAIRMAN. You spoke of the length of time required to pass the Welland Canal. Is not that time mostly occupied by the passage through the locks?

Mr. BUSH. A good deal of it. There are several miles, I think, where the excavation is 60 feet—four or five miles I think. They have no tow-path there. They start from the lock with a tow-path; then they put on a tug and run about eight miles, and then put on the horses and tow, and these changes and the great number of vessels make the difficulty. I was there on Saturday, and there is a string of vessels which seemed to me crowding one upon the other. There were at least a dozen there urging their way across the locks.

The CHAIRMAN. I had supposed that the chief part of the time was taken up by the passage of the locks.

Mr. BUSH. They can cross six locks in less than eighteen hours; the canal-men there told me so. But, after the determination of the board of public works, all the contractors and canal-men went into a room and talked the matter over, and they passed through the twenty-six locks. You would not need so many here, and they are not going to build so many when they enlarge—but eighteen in eighteen hours. So that the whole seven miles through here can be traversed in one day, and the average through theirs would be three days. There might be such a crowd as to retard them, but a vessel could run through here without any difficulty in a day and save two days' time.

Mr. NORWOOD. Is it expected that the transit through the Welland Canal will be reduced to eighteen hours, instead of three days, when the locks are enlarged?

Mr. BUSH. O, no; it is twenty-eight miles long. It is the distance which delays. It simply increases the capacity of the vessel, and probably when the vessels are heavier they cannot be towed so rapidly, either by steam or horses, as these light vessels; but these light vessels, passing through, average three days.

Mr. NORWOOD. Will that be the average after the enlargement of the canal?

Mr. BUSH. It will be a little longer time, because you cannot move a large vessel so rapidly as you can a small one. I think it will be, if anything, a longer time.

Mr. NORWOOD. They will not diminish the number of locks then.

Mr. BUSH. They do diminish it—from twenty-six, I think, to eighteen. They reduce and make them longer and higher lifts. The elevation at Buffalo could be obviated, the expense of this transshipment. If a vessel starts and goes clear through, it avoids about 2 per cent. from going into the elevator before being transshipped. Two cents is a considerable item. It is from one to two cents sometimes, and sometimes it amounts to more.

The CHAIRMAN. One and a quarter of it is five days.

Mr. BUSH. Yes, sir; you may calculate on 1 per cent. at least. Now

that is obviated. If you make a channel right through, so that a vessel can start from Chicago and Milwaukee and go right through, that percentage is saved; the time is saved; the interest on the cargo is saved. You can go through certainly in four days.

The CHAIRMAN. I wish to get your views on this point; one that has been suggested to me. The Canadian people are going to enlarge their canal to the capacity of a thousand-ton vessel. Their policy has been to charge only enough tolls to maintain the canal, not to pay any interest on the expense.

Mr. BUSH. You are too generous toward us. We charge, sometimes, as you do, all we can get.

The CHAIRMAN. Only half a cent a bushel?

Mr. BUSH. I think it is more than that, but will send it to you. Our revenue from our canals is quite large.

The CHAIRMAN. They do not nearly pay the interest on the cost, however; but what I was coming to is this: Assuming that to be the principle, and that their tolls are low and not enough to pay the interest on the cost of construction, is it not cheaper for us—as by the treaty of Washington we have an equal right to use their canals as themselves, and upon the same terms—to join with them in the use of their canals at present, enlarged as they would be, rather than to build one ourselves and have to charge tolls enough to pay interest on its construction?

Mr. BUSH. No; I think not.

The CHAIRMAN. I want to hear you on that point.

Mr. BUSH. No, I think not; they will tax you there about all you will bear. They are ambitious, of course, to secure commerce there and the competition between that route and the Erie Canal is what keeps the charge down. And so with all their canals all the way through to Montreal. There is, with that canal, I think, about eighty miles of canal navigation to Montreal. I suppose, from the different routes which have been made by engineers, a canal through here need not cost more than eight or ten millions of dollars. It is seven miles. Now it is an object. I do not know what the interest of that would amount to, but probably \$560,000; you may charge that amount of toll and you will charge less toll than is charged there, because you will have all the vessels. Not a vessel will go through there if they can have a seven-mile canal. They have a great prejudice against it; rubbing on the side, tearing off their paint, wearing the vessel, &c., makes a very strong prejudice against it. All these men who wrote me, and some of them were men of ability, said, "give us, if possible, the shortest canal." They passed resolutions in favor of a short canal and sent them on to Ottawa. You may charge \$560,000, and you may charge for tending the locks, and you will find it cheaper than it would be in partnership with them over there—cheaper than the tax they will make on you. And then, again, you will have a canal of your own, that you can always control; you have the means to build it. They are stunted in their ability. Where this great excavation is made, the quicksand underneath at one time rose up from the bottom and tipped a scow-boat over, and drowned seven men. It rose right up from the bottom.

A canal on the other side would be far more expensive and two miles longer than the canal you can build on this side. I do not believe you can enlarge the canal from Oswego to Albany so as to cheapen navigation and make a very material deduction in the cost of transportation.

You are going to Chicago and Detroit, where you will be furnished with the most positive and impartial data in the cost of transportation,

for they are not interested in any one locality. But these men who have addressed you—very fair and good men, and I respect them—are interested, and they think that Buffalo constitutes a large portion of this hemisphere.

Mr. CONOVER. What did I understand you to say was the time required to pass through the Welland canal now?

Mr. BUSH. Three days.

Mr. CONOVER. What number of locks are there?

Mr. BUSH. Twenty-six. They reduce it to eighteen, and not to exceed twenty, I think.

Mr. CONOVER. But you think the increased tonnage will make them as long in passing through as they gain by the less number of locks.

Mr. BUSH. Yes, sir; they can afford to come here and pay 30 cents a bushel through this short canal instead of going through the other, of twenty-eight miles.

The CHAIRMAN. If they can pass the locks in one day I do not see why they should be two days in going twenty-eight miles.

Mr. BUSH. I think it would take all of a day and a half to tow a large vessel of 600 tons twenty-eight miles.

Mr. CONOVER. Is it not estimated that it would require twenty-two locks over this seven miles?

Mr. BUSH. It certainly would require no more locks than on the other side, and one lock less.

Mr. CONOVER. Why does it take only one day to go over this same number of locks and three days yonder to go over?

Mr. BUSH. Now, supposing they tow two miles an hour; that, probably, is the maximum with a large vessel. Then it would take to go over to the bridge of the mountain, five miles, say ten hours at two miles an hour. That is probably as rapidly as they could tow. I have been told that it took them about three days to get through the Welland Canal.

The CHAIRMAN. The statement is about two days for sail and one day for steam through the Welland Canal.

Mr. BUSH. O, it is a mistake. I wish you would go through that canal and see it, and I think you will find, from all of the collectors, lock-tenders, and all of them, that it takes three days.

Mr. HOTCHKISS. What is the character of the banks of the Welland Canal?

Mr. BUSH. It is generally of earth.

Mr. HOTCHKISS. Now, they necessarily have to tow very slowly, do they not?

Mr. BUSH. Yes, sir.

Mr. HOTCHKISS. In this Niagara Canal, of which you have been speaking, the sides are rock-bound, and a propeller will proceed through this canal with equal speed to what they do on the river and on the lake?

Mr. BUSH. Yes, sir; they could do it without washing the banks. That is true, but then I doubt whether it would be safe to do it. If it was large enough, so that they could steer with safety between rocks, they could do it. Rocks are bad things to come in contact with. I spent a year examining the canals of the State of New York, by order of the legislature, and they do not average much over three miles on the Erie Canal with a light boat. It is only through that deep excavation, as I say, at Allensburgh, that they tow with tugs. When they can get the horses on they do so. I think if you inquire of commercial men, they will tell you that it takes from two to three days to go through the Welland Canal. I know, generally, three days by detention and other causes.

And you will find a great many vessels running from Chicago directly through to Oswego, and down to Montreal. You will, however, get more perfect data from those commercial men than I can give you. What I report to you is simply what gentlemen have informed me.

The committee here adjourned.

CHICAGO, ILLINOIS, *Friday, September 26, 1873.*

The committee met at 10 a. m.

Statement of R. Diefendorf, agent of the Northern Transportation Company.

The CHAIRMAN. You are engaged in lake transportation?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. What companies do you represent?

Mr. DIEFENDORF. The Northern Transportation Company, Vermont Central line.

The CHAIRMAN. That runs in connection with the Vermont Central line, you mean?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. What is the nature of that connection?

Mr. DIEFENDORF. It is a through line. Our line now is managed by the Vermont Central line, or the Central Vermont, I believe, they call it now. We have not changed our name entirely, but I understand the railroad corporations call it the Central Vermont.

The CHAIRMAN. What I want to know was whether it was owned by the Vermont Central.

Mr. DIEFENDORF. It is not directly owned by the railroad; but the officers of the railroad company own the controlling stock, I presume. This change was made two years ago. We used to be the Northern Transportation Company of Ohio, and we are still, virtually.

The CHAIRMAN. How are your through freights made, by steamers or otherwise?

Mr. DIEFENDORF. As desired. We contract through to all points in New England, or nearly all points, or we give a local lake rate. We run to Ogdensburgh and Oswego, in fact we can go most anywhere, to Kingston, Cape Vincent, or any point on the Saint Lawrence River, or we can go to Montreal.

The CHAIRMAN. Do you run to Montreal?

Mr. DIEFENDORF. We do not at present, but we have sent a great many propellers through to Montreal, not, however, within two years.

The CHAIRMAN. Not since the connection with the railroad was formed?

Mr. DIEFENDORF. Not since the direct connection was formed. Of course we always had a contract with the Vermont Central people to carry our freight when we were not connected with them as we are now.

The CHAIRMAN. What is the location of your route?

Mr. DIEFENDORF. We run from here through the chain of lakes, through the Welland Canal, through the Saint Lawrence River to Ogdensburgh, and connect there with the Vermont Central lines leading on to Boston. We connect with the rail at Ogdensburgh.

The CHAIRMAN. How do the rates to Montreal and your rates usually compare, to Ogdensburgh or Oswego; do you remember the difference?

Mr. DIEFENDORF. We cannot give any specified difference. It de-

pendes a good deal on the demand. When flour is 75 cents per bushel to Ogdensburgh it is about 90 cents to Montreal, or in that proportion.

The CHAIRMAN. How do you regard in your shipments the Welland Canal—as being a serious embarrassment on your line?

Mr. DIEFENDORF. It is to us, sir, very serious.

The CHAIRMAN. In what respect?

Mr. DIEFENDORF. We have been embarrassed more this year, perhaps, than we ever have before. We should run through there in about twelve or fourteen hours, and we have been detained as long as forty-eight and fifty-two hours.

The CHAIRMAN. On what account, the pressure of business?

Mr. DIEFENDORF. Yes, sir, and the lack of water. They cannot carry our tonnage. They have to go light, and have to fill up with the way-freight between here and the canal. They do not allow us to lock drawing more than 10 feet of water, which is a serious embarrassment to us, and the loss of at least 75 tons of freight to every propeller. Our boats will average from 50 to 75 tons less than we should carry through.

The CHAIRMAN. Some of the boats tranship at a point there?

Mr. DIEFENDORF. The sailing-vessels do; but we cannot do that. We have lightered a great deal of freight up to the last two years; but they have been dredging there and trying to get water. Last year we had to stop that. We could not get into the canal and get to the dock and light our freight.

The CHAIRMAN. So that on all your through freights to Ogdensburgh, or anywhere beyond the Welland Canal, you lose what?

Mr. DIEFENDORF. From 50 to 75 tons on each boat; but heretofore we have been able to lighter a certain quantity of rolling freight across the Welland Railroad. Until within the last two years we could not do it.

Mr. DAVIS. What is the average capacity of your boats?

Mr. DIEFENDORF. On the canals they average about 350 tons now, or, perhaps, 360 tons. We can carry through the lake 450 tons. On every boat you might say that the average is 75 tons of through freight which we are obliged to leave off, on account of the loss of water in the canal.

The CHAIRMAN. Can you give us the names of the various freight water-lines running east from here?

Mr. DIEFENDORF. The Western Transportation Company, on the New York Central line—that is the Western Transportation line, old, and consolidated with the New York Central Railroad, called the Western Transportation Company, New York Central Railroad. The other is the Union Steamboat Company, Erie Railway line.

The CHAIRMAN. That is the way they are named?

Mr. DIEFENDORF. Yes, sir; the other line is the Anchor line, the Evans line of propellers. They run to Erie and to Buffalo.

The CHAIRMAN. Have they any connection?

Mr. DIEFENDORF. They have; but how closely they are connected I cannot say.

The CHAIRMAN. Do you know the nature of the connection of the two other lines; I mean the first two you mentioned?

Mr. DIEFENDORF. Nothing definitely; only they are controlled by the railroad-lines to a certain extent.

The CHAIRMAN. Do the agents of those railroads here have anything to do with fixing the through freights on steamboat-lines?

Mr. DIEFENDORF. No, sir; the agents of the steamboat-lines have the only control of the steamboat-lines; that is, the agent of the New

York Central proper has nothing to do with the New York Central line of propellers. Then another line, the Grand Trunk, or the Sarnia line, Grand Trunk Railway. They run to Sarnia in connection with the Grand Trunk road.

The CHAIRMAN. Are there any other considerable number of outside teamboat companies?

Mr. DIEFENDORF. No, sir; there are very few propellers running wild nowadays. They are all running in connection with some railroad-line. We used to do so some years ago; in fact nearly all of our propeller fleet were running wild, as we call it. Running wild is running to whoever we may get a load for, or whoever we may be consigned to; but we are all now running in connection with some railroad-line that gives us freight and takes our freight.

The CHAIRMAN. They give you a preference and you give them a preference?

Mr. DIEFENDORF. Yes, sir; certainly.

Mr. NORWOOD. There is no boat-line, then, as I understand you, independent of any railroad-line?

Mr. DIEFENDORF. I do not know of any running to Chicago; that is, in the eastern trade.

Mr. DAVIS. Has not the Erie Canal some connection—some boats?

Mr. DIEFENDORF. They have connections, of course. You ship corn to-day, and it is at your pleasure whether you have it go by rail from Buffalo, or by canal.

The CHAIRMAN. If nothing was said about it, it would go over the rail?

Mr. DIEFENDORF. Yes, sir; but if you only shipped it to Buffalo to make your own arrangements there, you could do so.

The CHAIRMAN. Does the Erie Canal have any agents or officers in this part of the country to solicit freight for them?

Mr. DIEFENDORF. No, sir.

The CHAIRMAN. It only receives such through freight as is given to it?

Mr. DIEFENDORF. Yes, sir; their rates are made in Buffalo. Freights change from day to day.

The CHAIRMAN. Does the line make any difference in the rate when forwarded by canal or rail from here to Buffalo?

Mr. DIEFENDORF. Yes, sir. I am not in the Buffalo business; I am only telling you what I recollect about it. If you would ask one of the gentlemen who are the agents of the Buffalo line, perhaps they could give you more details than I can.

The CHAIRMAN. They have lines there running here?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. In connection with Buffalo, but not of any canal business?

Mr. DIEFENDORF. No, sir. Now, for instance, you ship a cargo of wheat; it would want to go through by canal to Buffalo, and from Buffalo to New York. You only contract your freight from here to Buffalo, which is as far as the agent of the New York Central, or any other Buffalo line, will contract, and it is as far as you care to contract it, for you want to take the benefit of whatever rate there may be from Buffalo to New York by canal. They do not give any through rate, but if you wish it contracted right through by rail they will give you a through rate to New York. It is, say, 33 cents to-day on wheat, but if you ship a cargo of wheat to-day you may not know whether you want to send it to New York or to Buffalo. You only get a local rate to Buffalo. Before it arrives at Buffalo, if you conclude to ship it to New York, you

order your consignees in Buffalo to make the best trade they can, and ship it by canal through to New York.

Mr. DAVIS. If your line sent to Buffalo, and I had determined after getting there to send it by rail, would it cost more to send than if I had forwarded it through at once?

Mr. DIEFENDORF. They might take some advantage of it. Local are higher than through rates; they have no competition. From here to New York and Boston we have competition, and all have to take a certain rate. A man may demand one price at one time and another at another. I have taken corn from here to Boston as low as 30 cents a bushel. We get very little out of it at those prices, but at the same time the local rate would be two-thirds if it was shipped at the point where we carry it to.

Mr. DAVIS. Are you familiar with the rate from Buffalo by rail?

Mr. DIEFENDORF. I am not familiar with the Buffalo trade at all.

Mr. DAVIS. Now, taking your line, if it was shipped to Ogdensburgh and not to Boston, at once, and afterwards sent by rail, would there be a difference in freight?

Mr. DIEFENDORF. O, yes, sir.

Mr. DAVIS. How much?

Mr. DIEFENDORF. It would have to go at regular rates, whatever they might be. I cannot give you the local rates, because I keep no track of them at all, and I am doing nothing but through business. That is, we have certain points all through New England that we make rate the same as Boston; they are all what we call common points. The rate to Manchester, Lowell, Nashua, Concord, Salem, and all those points are the same as the rate to Boston.

Mr. DAVIS. What are your Boston rates?

Mr. DIEFENDORF. The all-rail rate is 33 cents on corn. We have been getting as high as 36 cents on corn through.

Mr. DAVIS. Then your rate to-day is a little higher than all-rail?

Mr. DIEFENDORF. It has been; yes, sir. Our rates are nominal to day, of course. We are doing nothing.

Mr. DAVIS. How long has that been the case?

Mr. DIEFENDORF. We do not have any fixed rate. We only work from day to day. The rail have fixed rates.

The CHAIRMAN. Is there competition between your various steamer-lines?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. There is no combination between them?

Mr. DIEFENDORF. No, sir; there is competition. The reason that we are obliged to make our rates from day to day is that there is no competition. When we have a boat we have to fill her up at some price, and we are obliged to take whatever we can get.

The CHAIRMAN. Has there been any combination of those various lines?

Mr. DIEFENDORF. No, sir.

The CHAIRMAN. Do you know whether there has been any combination between the other lines? There are three lines running in connection with the New York Central, the Erie, and the Pennsylvania Central. Now, do they ever enter into combination?

Mr. DIEFENDORF. I never knew them to. In fact, we are in competition with them.

The CHAIRMAN. I know you are in competition with all of them; but I want to know whether they, themselves, entered into combination among themselves, as against you?

Mr. DIEFENDORF. O, no.

The CHAIRMAN. You compete with each one of them individually, and not with the whole of them?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. I asked that question for this reason. It seems that those three lines each run their lines of vessels. It occurred to me that the agents of the railroads and the agents of the steamers on those through lines would be very likely to consult together and fix their rate.

Mr. DIEFENDORF. O, no, sir; they work independently of railroads in this way: If, to-day, local freights to Buffalo will pay a steamboat better than the through rate, they are going to take it, and take it regardless of the railroads. If I could get 25 cents for corn to-day at Ogdensburgh, and 40 cents to Boston, I should prefer to take to Ogdensburgh, and I should take it. There is no combination, so far as the lake business is concerned. Perhaps we would have got along better and got better prices if there had been, but we are obliged to take what we can get when we want it. We have to take it. If freights to Buffalo are 3 cents a bushel we have to take them.

The CHAIRMAN. You fix your rates, then, based upon the principle of demand and supply?

Mr. DIEFENDORF. That is all, and nothing else; and railroads fix their rates and carry a certain length of time; and when that time expires they make some new arrangement.

The CHAIRMAN. What is your estimate of the actual cost, exclusive of the profits of transportation, between here and Buffalo per bushel?

Mr. DIEFENDORF. Well, sir, I should not venture to make any estimate in regard to Buffalo, but I should think that the actual cost, by propeller, would be 4 or 5 cents a bushel. I do not know that I could figure it in that way either, because it depends a good deal on what you get back and what out-freights are. Sometimes it is one price, and sometimes it is another. Now, the up-freights, some seasons, do not amount to anything; in fact, we do not get anything for carrying the up-freights, any way. Comparatively speaking, they amount to nothing.

The CHAIRMAN. What is the average cost of the vessels of your line?

Mr. DIEFENDORF. About \$50,000. Our boats are small; they being obliged to go through the canal.

The CHAIRMAN. How many men do you employ on each boat?

Mr. DIEFENDORF. The crew is about twenty or twenty-one.

The CHAIRMAN. What compensation do you pay them?

Mr. DIEFENDORF. We pay from \$20 to \$100 a month.

The CHAIRMAN. The hundred dollars a month is to your officers?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. How many officers have you?

Mr. DIEFENDORF. We pay the captain \$100 a month; the mate gets \$90 a month; the engineer about the same; the second mate \$75, and the deck-hands whatever we can hire them for—sometimes \$50 a month, and sometimes \$40; the wheelmen get \$40 or \$50.

The CHAIRMAN. What is the time of the round trip between here and Ogdensburgh?

Mr. DIEFENDORF. Our time is about seventeen days. The distance is 1,365 miles.

The CHAIRMAN. Do you know the time for a round trip to Buffalo?

Mr. DIEFENDORF. They consume about ten days. Perhaps a little more; ten or eleven days.

Mr. DAVIS. You will receipt for your grain through from here to Boston, Lowell, and all those places at the same rate, I understand you?

Mr. DIEFENDORF. Yes, sir.

Mr. DAVIS. A difference of fifty miles would not make any difference in your freight?

Mr. DIEFENDORF. O, no, sir.

Mr. CONOVER. Do you carry any lumber?

Mr. DIEFENDORF. No, sir.

Mr. DAVIS. Do you find it necessary to change your corn or your grain at any time for fear of spoiling, sweating, &c.?

Mr. DIEFENDORF. We have not had any trouble of that kind in several years, but we have at times been obliged to run through the elevator.

The CHAIRMAN. What are the number of your vessels?

Mr. DIEFENDORF. We have twenty propellers exactly.

The CHAIRMAN. Three hundred and fifty tons is the actual amount carried, and not the tonnage of the vessel.

Mr. DIEFENDORF. Not the tonnage. That is the amount that we can carry through the canal. Of course we can carry 450 or 475 tons through the lake very comfortably, but the canal shuts us off about 75 tons.

Mr. DAVIS. By the increased size of the canals you expect to carry your full capacity?

Mr. DIEFENDORF. O, yes, of course. We could take 450 tons nearly every boat. We cannot do as sailing-vessels do; they take from twenty to twenty-five thousand bushels of corn from here to Kingston. They will get to the canal and they will get the elevator and light themselves of 6,000 or 7,000 bushels, and then they will go through the canal and take it aboard again; but we are a passenger propeller line and calculate to run on time, the same as a railroad, and we cannot stop, because when we get through the canal we might have a large load of passengers on board, and there might be two or three vessels waiting at these elevators to get their wheat or corn aboard. We could not do that. We must go right along. We have two boats a day leaving Ogdensburgh, one for Chicago, and one for Lake Erie; one leaving at 1 o'clock, and one at 7 o'clock in the evening. We have to be on hand to leave—that is, excepting in the fall, when bad weather comes on, when, of course, we do not calculate to run on time, but we leave as soon as we get loaded.

Mr. DAVIS. Does your route keep open, on an average, as long as the Buffalo route?

Mr. DIEFENDORF. Yes, sir, we open a little earlier in the spring than the Buffalo route on account of Buffalo harbor, and we run as late as they do. We run through the canal a little earlier than Buffalo harbor is open. It is hardly ever open from the 1st to the 5th of May, and we always get through the canal by the 15th of April, and sometimes before; from the 1st to the 15th. We calculate to get fitted out about the 1st of April, and then leave, of course, as soon as circumstances will admit. Sometimes they are repairing the canal, and we cannot have boats leave that end quite so quickly on that account, and we will not leave here quite so quickly on account of the straits.

Mr. NORWOOD. Why is Buffalo harbor so late in being open?

Mr. DIEFENDORF. It is the situation of it. The ice gets in there and does not break up quite so quickly. They have not the wind to take it out. It is not in the right direction.

Mr. NORWOOD. The wind banks up the ice?

Mr. DIEFENDORF. Yes, sir, it banks it up into the harbor and holds it there. We are sometimes caused considerable trouble at Port Colborne, at the mouth of the canal. Very often we have the canal open

and ready for navigation, and boats get through into the harbor at Port Colborne, and the ice will shut us in sometimes for a week, and we are unable to get out. It has happened, perhaps, two or three times since I have been in the business here in the last ten or twelve years.

The CHAIRMAN. There is a line of boats owned in Montreal that runs in competition with your trade?

Mr. DIEFENDORF. There is a line of Montreal propellers running to Chicago.

The CHAIRMAN. I understood you to say that there never had been among the agents of the lake lines any agreement as to prices of freight?

Mr. DIEFENDORF. No; no special agreement, and not any combination. We very often agree at a certain day to try and keep the rates up, and to do the best we can, but there is never any combination. We always take the best we can get.

The CHAIRMAN. There is no pro-rating?

Mr. DIEFENDORF. O, no; no pro-rating at all; in fact, no combination. Our rates are made from day to day, and it is entirely different from the railroads.

Mr. NORWOOD. Do you look to the rates by rail in fixing the rates by water, as you rise and fall, day by day?

Mr. DIEFENDORF. Well, the rail does not do that. The rail does not rise and fall day by day. The rail fixes a rate for a specified time—not, perhaps, for a specified time, but for an indefinite time, until they see fit to make another rate, which we do not do. To-day rates may be 50 cents a hundred to New York. The railroads may get together and make the rate 50 cents on fourth-class freight, or grain, from here to New York. Now, that rate stays in force until they see fit to raise the rate and then they go up together. We do not do that. We, of course, have to be governed to a certain extent, because on all-rail there is no insurance, and we are, nine-tenths of the time, obliged to take considerably less than all-rail, in order to cover the cost of insurance, and the time.

The CHAIRMAN. Your maximum or minimum rate would be regulated by the rail during the time that theirs remains fixed?

Mr. DIEFENDORF. Yes, sir; to a certain extent.

The CHAIRMAN. But fluctuations, in that time, would be owing to other causes?

Mr. DIEFENDORF. It would be owing entirely to the demand.

The CHAIRMAN. When the crop is large do you charge a higher or lower rate?

Mr. DIEFENDORF. It depends on the demands for shipments entirely. We carry corn many a time at a loss, and so does the whole vessel trade. They do it where they are actually losing money, because they are obliged to.

The CHAIRMAN. A gentleman, representing the railroad interests, stated to us in New York that when the crops were large their rates were higher. I wish to know whether the same rule applies to water navigation.

Mr. DIEFENDORF. I presume rates would be naturally better, when the crops were large, than if there was nothing to do. They could not help it. When we have nothing to carry, comparatively, we are glad to get anything which will pay at all; but when we are filled up with grain and there is a demand for shipment we get the best prices we can, and when the rail is full, of course they increase their rates. They do not now and they have not this fall. The railroads have got more than they can carry, probably, from Chicago, in the next three weeks.

The CHAIRMAN. As I understand it, then, you follow the same rule as the railroads. When there is but little your rates are low, because you desire to carry it?

Mr. DIEFENDORF. We have to take whatever we can get and railroad companies do not.

The CHAIRMAN. Then, when the demand is pressing, your rates go up?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. Are there any boats running in competition with the railroad steamboats and lines, excepting the Montreal boats and the Buffalo boats?

Mr. DIEFENDORF. No, sir; there are no boats running wild at all. They all have some connection, but they all work on their own basis. If local freights are better than through freights, they take them without regard to rail.

The CHAIRMAN. Do you know whether the Buffalo lines are owned by a single company or by a number of companies?

Mr. DIEFENDORF. I cannot tell you in regard to that, sir. I presume that some of their propellers are owned by individuals the same as a good many other lines are. Some of the propellers are owned by individuals, chartered by the line, and get a *pro rata* of the earnings of the line.

Mr. NORWOOD. I understood you to say that the New York Central Railroad, for instance, has an agent here, and that the water-line running in connection with the New York Central has an agent here also; am I right?

Mr. DIEFENDORF. I do not think that the New York Central has an agent here—not a special agent.

The CHAIRMAN. Now about this combination between the lines.

Mr. DIEFENDORF. Railroads are all agents for each other to a certain extent, and these car-lines are agents for the railroads, but I do not think that the New York Central has one. They have a ticket agent and a ticket-office here, but I think they have no special agent here for the New York Central line.

The CHAIRMAN. Well, it is immaterial about that in any event. The water-line has an agent here?

Mr. DIEFENDORF. Yes, sir.

The CHAIRMAN. When he takes freight for New York or Boston, he fixes the rate, does he not?

Mr. DIEFENDORF. He fixes the through rate.

The CHAIRMAN. That runs through the water and rail both?

Mr. DIEFENDORF. Yes, sir; he has authority to make any rate he may see fit.

The CHAIRMAN. Is there any subdivision of those rates by water, or rail, or is it just so much delivered in New York?

Mr. DIEFENDORF. It is so much delivered in New York, but the rail gets a certain proportion and the steamboat line a certain proportion.

The CHAIRMAN. That is what I wanted to get out. What is that proportion?

Mr. DIEFENDORF. I could not tell you on the Buffalo line; I am not informed in regard to their division.

The CHAIRMAN. The rate is different, however, is it not?

Mr. DIEFENDORF. Well, I do not know whether they get fifty and fifty, or forty and sixty, or thirty and seventy. I should think that they got about forty and sixty, but I cannot say. The agents of the

Buffalo line, perhaps, could tell you. I am merely guessing at it in any event.

The CHAIRMAN. How would it be on your line?

Mr. DIEFENDORF. We calculate to get fifty and fifty. I believe that is the division.

The CHAIRMAN. You carry how many miles?

Mr. DIEFENDORF. One thousand three hundred and sixty-five miles.

The CHAIRMAN. How far do they carry it by rail?

Mr. DIEFENDORF. From four hundred to six hundred miles. It depends on where it is.

Mr. NORWOOD. What is the relative distance by water and rail on the other lines, say by Buffalo?

Mr. DIEFENDORF. I think it is about eight hundred miles, between eight hundred and a thousand or nine hundred miles. I have forgotten the exact distance from here to Buffalo by lake. It is nearly a thousand miles. I ought to know but I have forgotten.

The CHAIRMAN. The division between you then of fifty and fifty is predicated upon the distance of carriage, is it not?

Mr. DIEFENDORF. Well, it is not predicated, perhaps, on the distance, because we carry it a great deal farther than they do. It is predicated upon the cost of transportation. We carry property on through rates from four to six hundred miles, wherever it may be. The line direct from Boston to Ogdensburgh I think is four hundred and four miles.

Mr. CONOVER. You carry it one thousand three hundred miles for what they carry it between four and five hundred miles.

Mr. DIEFENDORF. Yes, sir.

Mr. NORWOOD. Of course it is predicated upon the cost, but that cost is estimated. I suppose distance is an element in it.

Mr. DIEFENDORF. Yes, sir.

Mr. DAVIS. Do you know what it costs you at Ogdensburgh to transfer from the boat to the cars through the elevator.

Mr. DIEFENDORF. It costs us a cent a bushel for elevating.

Mr. CONOVER. At Ogdensburgh?

Mr. DIEFENDORF. Yes, sir. Then we have shoveling, &c., and it costs about \$3 a thousand. Then we have to pay \$2 a thousand for trimming here at the elevator before we leave.

Correction by Mr. Diefendorf.

"CHICAGO, September 27, 1873.

"DEAR SIR: Will you please make the following correction in my statement of yesterday. I did not mean to infer that the officers of the rail line owned most of the stock. I meant that the management was in the hands of the officers of the road. And as to cost of transporting grain, when I said 4 to 5 cents, I meant to Buffalo by rail and not to Ogdensburgh by steam. I should think the actual cost to Ogdensburgh by steam is from 8 to 10 cents per bushel. Will you please make these corrections and oblige

"Very truly, your obedient servant,

"R. DIEFENDORF.

"Senator WINDOM,

"Chairman Senate Committee."

Colonel D. C. HOUSTON, United States Engineers, examined:

The CHAIRMAN. Colonel Houston, will you furnish to the committee a history of what has been done on the Fox River improvement?

Colonel HOUSTON. I have a pamphlet which shows the situation of the canal, which I here present for the inspection of the committee. This work was started first by a grant of land by the United States to the State of Wisconsin, about twenty-five years ago, as near as I can state it now, for the improvement of the Fox and Wisconsin Rivers, and the work was commenced by the State, in making a canal connecting the two rivers at Portage City, and the construction of locks and dams on the Fox River, principally the Lower Fox River, as it was called, to make slack-water navigation.

The CHAIRMAN. By the Lower Fox, you mean from Lake Winnebago?

Colonel HOUSTON. Yes, sir; to Green Bay. The State gave the work up after a while. I cannot give the dates as I have not got them with me. The State then transferred the work to a company known as the Fox River Improvement Company. That company failed, and it was turned over to a new company called the Green Bay and Mississippi Canal Company.

Mr. NORWOOD. Did the State sell out to the first company?

Colonel HOUSTON. They turned it over in some shape or another. That matter I have never been able to get at. I have never had occasion to look it up. I think they gave them the lands—gave the whole thing over to the company.

This new company carried on the work, and in 1867 the Government made surveys of the Wisconsin river with a view to its improvement. The people had then got dissatisfied with this work as it was conducted by the company about 1867 and 1868, and they made a movement to get the Government to take hold of the whole work at that time. That resulted in the act of Congress of July 7, 1870. That act directed the Secretary of War to adopt such a plan for the improvement of the Wisconsin river as should be approved by the chief of engineers, and also authorized him to appoint a board of arbitrators to find out how much ought to be paid the Green Bay and Mississippi Canal Company for all their property, locks, dams, &c., and canals. It also provided that all tolls that the Government should ever receive from the work should be deposited in the Treasury until the Government should be reimbursed for all moneys that they should expend on the work. That act was dated July 7, 1870, and the appropriation bill of July 10, 1870, appropriated a hundred thousand dollars for the improvement of the Wisconsin River. This money was to become available as soon as this Green Bay and Mississippi Canal Company should file an agreement that they would abide by the decision of this board of arbitrators that the Secretary of War was to appoint. They did that the next year, 1871. They filed this agreement, and we commenced expending this \$100,000 on the improvement of the Wisconsin River, adopting the plan of constructing the low-water channel of the river by means of wing-dams, cutting off the lateral channel.

This board of engineers made an award fixing the value of the improvements of this company on the Fox River at \$1,048,070. They then deducted from that the sum of \$723,070. That was the sum that had been realized from the sale of those lands. That left a balance of \$325,000; of that, \$140,000 was estimated to be the value of the water-powers belonging to the company and \$40,000 certain personal property of the company. That deducted from \$325,000, left \$145,000 as the value of the canal's locks and dams.

Mr. DAVIS. Was that paid by the Government?

Colonel HOUSTON. Yes, sir; on June 10, 1872, by that act of Congress that amount was appropriated to be paid by the company, and that was

done. It was about a year ago. Now, that gives the whole thing to the charge of the Government.

The CHAIRMAN. So the Government now owns and is running whatever there is available at the present time there?

Colonel HOUSTON. Yes, sir; it now runs the whole thing. A portion of these lands, which are now worth about a million of dollars, are not sold. Those still belong to the company as a part of their property; so that it has cost the Government about a million of dollars in lands and money to get the work back into its own hands; and having done that, last March they appropriated \$300,000 for the improvement of the whole line of the Fox and Wisconsin.

Mr. NORWOOD. Do I understand you that the Green Bay Company had to account for the lands sold, some \$700,000, and then that they retained the remainder of the lands that were unsold?

Colonel HOUSTON. Yes, sir; that is the way I understood it.

Mr. NORWOOD. Lands that had been donated by the Government?

Colonel HOUSTON. Yes, sir; they have those now.

The CHAIRMAN. Do you know why they retained those?

Colonel HOUSTON. I only know the act of Congress reads in that way. I have it before me. I do not know why they retained it myself; but I believe, however, that it is in accordance with the terms of the law. It says: "These arbitrators" were "to fix an amount which ought, in justice, to be paid to this company for the transfer of all and singular this property and rights of property in and to the line of water-communication between the Wisconsin River and the mouth of the Fox River, including whatever locks, dams, canals, and franchises, or so much of the same as shall, in the judgment of the Secretary of War, be needed, and to that end is authorized to join said company in appointing a board of disinterested and impartial arbitrators, one of whom shall be selected by the Secretary aforesaid, another by said company, and the third by two arbitrators so selected: *Provided*, That, in making their award, the said arbitrators shall take into consideration the amount of money realized from the sale of lands heretofore granted by Congress to the State of Wisconsin to aid in the construction of said water-communication, which amount shall be deducted from the actual value thereof, as found by said arbitrators."

It seems that they were not positive exactly, but they fixed a certain sum as the value of the property to the Government to take it—what it was worth to the Government—and they then deducted from that sum the proceeds of the sales.

Mr. NORWOOD. Do you know the value of the land retained by the Green Bay Company?

Colonel HOUSTON. I do not, sir. Those lands are not all sold. They still have a land-office.

The CHAIRMAN. Your documents do not give the award of the arbitrators, do they? I mean the language of the award.

Colonel HOUSTON. It is here, sir, in their report.

Mr. NORWOOD. It is a very singular arrangement, to me, that they should be allowed to retain those lands.

Colonel HOUSTON. Well, I think the State found it could not carry on the improvement satisfactorily itself, and they turned this whole thing over to a company and gave them all the lands.

Mr. NORWOOD. If the State had the right to do that, then the Government ought not to have made them account for the value of the lands sold.

Mr. CONOVER. What is the length of the canal between the two rivers?

Colonel HUSTON. The present canal is a little over two miles.

Mr. CONOVER. Is it in operation now?

Colonel HUSTON. Not now. It has been allowed to shoal up. There has not been anything done there now for several years.

Mr. CONOVER. They have used it?

Colonel HUSTON. O, yes; boats have gone through this spring.

Mr. CONOVER. It has been allowed to shoal up, you say?

Colonel HUSTON. Yes, sir; it wants dredging before it can be used again.

Mr. CONOVER. The expense of digging that canal was not very great?

Colonel HUSTON. No, sir; it is all sand, and not very deep.

Mr. CONOVER. What is the depth of water in the canal when it is in running condition?

Colonel HUSTON. We have had as much as 4 feet; just now there are only 2 feet. The sand of the Wisconsin River flows into it; it has to be cleaned out occasionally. If it was used the boats would keep it clear; that is, if it were used to any extent.

Mr. CONOVER. How many locks are there in that canal?

Colonel HUSTON. One lock. There is a guard-lock on the Wisconsin, and then they lock down into the Fox and lock up each end.

Mr. CONOVER. What is the fall of water?

Colonel HUSTON. Eight feet.

Mr. NORWOOD. Are any of this Green Bay Company at Portage City?

Colonel HUSTON. No, sir; the president of the company, Mr. Stevens, is at Madison.

The CHAIRMAN. I see your report states the fact as to the availability of the Wisconsin River as to commercial purposes with these improvements. Have you any doubt as to its being made entirely available?

Colonel HUSTON. No, sir. It can be made navigable for vessels drawing 5 feet of water.

The CHAIRMAN. You think there would be no trouble as to the shifting sands?

Colonel HUSTON. No, sir; I do not think there will be. It is a matter of so small expense, comparatively, to improve the natural navigation, that it is worth trying in any event; and from what we have already done, we feel perfectly confident that we can accomplish that.

The CHAIRMAN. There has been no through business done on that route?

Colonel HUSTON. There was, years ago. There was considerable business done through there before railroads.

The CHAIRMAN. Why did it fall into disuse; on account of the fall of water?

Colonel HUSTON. Yes, sir; and the improvements on the Fox River have not been kept up.

Mr. CONOVER. The canal cannot be made navigable for vessels drawing more than five feet of water?

Colonel HUSTON. It may be, but it is doubtful. It is not considered to be a matter desirable to obtain more than that draught of water on the Upper Mississippi tributaries; it is not considered practicable. The Upper Mississippi is only navigable in low water for about three or four feet.

I wish to say that the work now is in the hands of the Government,

different from any other work of this character, and the appropriation that was made last year is too small an appropriation to carry on the work to advantage.

Mr. DAVIS. That was \$300,000?

Colonel HOUSTON. Yes, sir. Our lowest estimate for this work is three millions of dollars, on the plans we have adopted. It would take ten years at that rate; and we would not be able to carry on the work to advantage, and would have a great deal of dissatisfaction, which has already, in fact, exhibited itself, because we cannot make much of a show with \$300,000 per year on a work of that extent. There are twenty-two old locks on that improvement. Those have all got to be built in time. Some of them will last several years, but the dams have all got to be rebuilt, and the river dredged out, and four or five or six new locks to be built.

Mr. DAVIS. I understand you that that three millions was for the improvement from the Mississippi River to Green Bay?

Colonel HOUSTON. Yes, sir.

The CHAIRMAN. And that would make 5 feet navigation from the river to the lake?

Colonel HOUSTON. Yes, sir.

The CHAIRMAN. Did you make a detailed estimate of the cost?

Colonel HOUSTON. Yes, sir.

The CHAIRMAN. Is that in print?

Colonel HOUSTON. It will be next winter; it is in the report to the Secretary of War.

The CHAIRMAN. It is not yet in print?

Colonel HOUSTON. No, sir.

The CHAIRMAN. What will be the dimensions of that canal at Portage?

Colonel HOUSTON. Seventy feet wide and five feet deep. It may be arranged for six feet depth. The locks will all be arranged for six feet deep, so that, in high water in the Wisconsin, boats drawing six feet will always be able to go through.

The CHAIRMAN. There is no trouble whatever as to the supply of water for either five or six feet?

Colonel HOUSTON. No, sir.

Mr. DAVIS. Please state the size of the locks.

Colonel HOUSTON. The locks are thirty-five feet wide and a hundred and sixty feet long. With regard to the supply of water, the estimates that were made show that there is a supply at low water of not less than three thousand cubic feet a second in the Wisconsin River.

Mr. DAVIS. You could use the Fox River also, could you not?

Colonel HOUSTON. Yes, sir; but the Fox has a limited supply on the upper river, and we expect to draw from the Wisconsin in case of low water.

The CHAIRMAN. Three thousand feet per second at low water, did you say?

Colonel HOUSTON. Yes, sir; from the Wisconsin River.

The CHAIRMAN. Do you remember the elevation of the Wisconsin above the Fox at Portage?

Mr. HOUSTON. It is about eight feet.

The CHAIRMAN. So that the whole volume of water could be turned either way at that point?

Colonel HOUSTON. Yes, sir.

Mr. NORWOOD. [Referring to map.] By whom was this map prepared which is attached to your pamphlet?

Colonel HOUSTON. By Mr. Edwards, who was the engineer of the canal. I think General Warren prepared the small map inclosed.

This canal has a greater capacity than the Erie. The locks are larger, and we use steam entirely. The canal is not more than six or seven miles of canal on the whole route, and all the balance is the improvement of the river. It is slack water. The Lower Fox is a beautiful river in the levels above the dams, having deep water. The Upper Fox is a narrow stream.

Mr. NORWOOD. Is the Fox a straight river?

Mr. HOUSTON. No, sir; the upper river is very crooked.

Mr. NORWOOD. How do you propose to improve that by this plan to straighten it?

Mr. HOUSTON. By dams and locks; we will make some cut-offs wherever it is practicable.

Mr. NORWOOD. You follow the bend of the river, however?

Colonel HOUSTON. Yes, sir; there have been a good many cut-offs made already.

Mr. DAVIS. Do you recollect the miles from the Mississippi to Green Bay; I mean just as it is to be improved?

Colonel HOUSTON. Two hundred and seventy-one miles.

Mr. CONOVER. Did you state the amount of money which had been appropriated for this improvement?

Colonel HOUSTON. Actual work by the Government, do you mean?

Mr. CONOVER. Yes, sir.

Colonel HOUSTON. Four hundred thousand dollars has been appropriated; that is, since 1871. One hundred thousand dollars was appropriated in 1870, and \$300,000 at the last session of Congress.

Mr. NORWOOD. And you think it will take \$2,600,000 more to make complete?

Colonel HOUSTON. Yes, sir; the whole work has to be rebuilt. The old locks are built of dry-stone masonry-walls, and protected by wood, and we had to prepare some of them this summer. Some of them are in pretty good condition, others are not. Several of them, however, will last some years.

Mr. DAVIS. You use a part of Lake Winnebago, do you?

Colonel HOUSTON. Yes, sir; nearly the whole length.

The CHAIRMAN. Have you the means at hand of making an estimate of the size of boats or tonnage that can pass through?

Colonel HOUSTON. Yes, sir; I think I have it somewhere. I will look for it, and give it to you. I think the largest boats they have used there are 300 tons, but no boats have ever been on the river that would fill the locks. The boats from Green Bay to Buffalo are 500 or 600 ton boats.

The CHAIRMAN. How is that harbor at Green Bay?

Colonel HOUSTON. It is in very good condition now.

The CHAIRMAN. What is the depth of water?

Colonel HOUSTON. Boats have gone out drawing thirteen feet and a half. Fourteen feet is the depth at which we are completing it now. There has been a good deal of money spent there. There was \$20,000 appropriated last year for that improvement. An entirely new channel has been made from the mouth of the river out into the bay. It is about the best harbor on the lake now.

Adjourned until Saturday, September 27th.

SATURDAY, *September 27, 1873.*

The committee met pursuant to adjournment.

The CHAIRMAN. Gentlemen, we have before us the Board of Canal Commissioners of this State, and I will call upon Mr. Utley, who I believe is the chairman of the board, to make some statements to us in reference to their work.

Mr. UTLEY. Mr. Chairman, I hardly know how to commence, whether by giving a brief outline of the condition of the canal, or how.

The CHAIRMAN. I was going to ask you, sir, in order to direct your attention to what we want to know, what your position was; how you are organized, &c.

Mr. UTLEY. We are appointed by the governor and confirmed by the senate, for two years, and have control of the canal, the improvement on the Illinois River and the Little Wabash River.

The CHAIRMAN. Your jurisdiction extends over those lines?

Mr. UTLEY. Yes, sir; all improvements owned by the State.

The CHAIRMAN. Will you be good enough to state to the committee the history and working of these water-lines in your State, so far as you may be advised of it; their origin, the manner of management, and their success or failure, and if failure, the cause of their failure.

Mr. UTLEY. The canal was commenced at a very early day; I think in 1836 or 1837; was it not, Mr. Anderson?

Mr. ANDERSON. Yes, sir.

The CHAIRMAN. Which canal?

Mr. UTLEY. The Illinois and Michigan Canal, reaching from Chicago to the Illinois River, at La Salle, a hundred miles in length. In 1837, in the general crash, work was suspended, and all the works that the State had engaged in, numerous railroads and the canals, seemed to fail. English people owned a large amount of the bonds that had been issued for the construction of the canal. In 1844 the proposition was made by the English bondholders, or to the English bondholders rather, that if they would advance sixteen hundred thousand dollars for the completion of the canal, it should pass into their hands, and its revenue go with what lands were owned by the State—the avails of those lands being paid into the canal fund to re-imburse them, to pay the bonds, the interest and the principal. The English bondholders appointed two trustees and the State one. It was under their control until the 1st of May, 1872. Previous to that the State had passed a law allowing the city of Chicago to get out what is known as the “bench.” The original plan of building the canal was to give it an incline from the Chicago River to the Des Plaines River, at Lockport, and then supply a portion of the water by pumping-works at Bridgeport, at the commencement of the canal, three or four miles from here, on the south branch of the Chicago River. The city applied to the State for permission to take out the bench—that is the summit level—and give a constant flow of water through the Chicago River down to Lockport. That was a distance of about twenty-seven miles that they deepened eight feet, at a cost of about three millions of dollars. Then the city was to have the tolls, the proceeds, all the revenues of the canal, to re-imburse them; but the tolls and revenues were not sufficient to even pay the interest.

After the Chicago fire, the State passed a law re-imbursing the city, and the whole tolls after that time were paid into the State treasury. I have succeeded in finding a copy of our report, and the tolls of our canals have not been very large, and cannot be until the Illinois River is improved.

The CHAIRMAN. Before you refer to that, I would ask if the original

design in building that canal was not to connect the navigable waters of the Illinois with the lake?

Mr. UTLEY. Yes, sir; that was the design. At that time there seemed to be a great deal more water in the Illinois River than there is now, from the constant drying up and settlement of the country. Of course, the committee understand all that.

The CHAIRMAN. Now please give us the reference to the tolls.

Mr. UTLEY. They have depended very largely on the stage of water in the Illinois River. Competition by railroads, of course, has somewhat interfered with the business of the canal. It has been the habit of the Rock Island Railroad to carry the great product of the country, corn, at very low rates from competing points. For instance, from La Salle the price of carrying a bushel of corn has been about 5 cents, and frequently as low as 4 cents, and sometimes as high as 5½ or 6 cents. The average price would be about 5—perhaps a little less than 5 cents per hundred miles, the whole cost of transportation being about one cent and seventy-five hundredths of a cent per ton per mile.

Railroads leading out of Chicago, in other directions, have charged about eleven cents per bushel for the same distance. I mean the Northwestern. I am not particularly advised as to the Great Western; but it was much larger than the canal. Consequently they have been able to get a good deal of freight. They have carried corn for 6 cents from Henry, one hundred and sixteen miles from Chicago, to Chicago. That was previous to the 1st of July last.

The CHAIRMAN. Do you know whether the railroads have carried as cheaply from any other competing railroad point as they have from this competing canal point which you spoke of?

Mr. UTLEY. No point in this State. The average charge has been on all the railroads leading out from Chicago, except, perhaps, the Rock Island, about 10 to 11 cents, or about 10 cents per bushel on corn for one hundred miles. The price on the canal has been 5 cents, and on the Rock Island Railroad, from the competing points, about 6 cents. I believe that is about the state of facts.

The tolls on the canals depended largely, as I said before, on the stage of water in the river, the original design being to connect the canal with steamboat navigation on the Illinois River, but, as the country became settled, of course, the sources have dried up.

The tolls, in 1848, were 87,000. I will repeat only a few: In 1855, 198,000; in 1860, 138,000; in 1870, 149,000; in 1871, 159,000; in 1872, 165,000. Although the river has been exceedingly low, yet there seems to be a gradual, constant increase in the amount of tolls; though the rate of tolls has been lessened.

The CHAIRMAN. What is your rate of tolls?

Mr. UTLEY. Taking corn as a basis, it is three mills a thousand pounds a mile.

The CHAIRMAN. Six mills per ton?

Mr. UTLEY. Yes, sir; that is the State toll. They were originally four mills per thousand pounds; in 1869 were reduced to three and a half mills; and in 1872 reduced to three mills per thousand pounds per mile.

Mr. DAVIS. Is that the toll on all the canals in the State?

Mr. UTLEY. There is no other canal. The improvement of the Little Wabash River consists of one lock and one dam, making a navigation of about thirty miles.

Mr. DAVIS. Connecting with the Illinois River?

Mr. UTLEY. No, sir; with the Ohio River at Shawneetown. The

Little Wabash empties into the Big Wabash at Shawneetown, a little way above.

The CHAIRMAN. What western or northern connections do you make with the Little Wabash improvement?

Mr. UTLEY. None, but an interior town or two.

The CHAIRMAN. It connects, then, only with the Ohio River, and not with the other system?

Mr. UTLEY. It has no connection with the other system of internal improvement.

The CHAIRMAN. What has been the surplus over cost of maintenance by your tolls?

Mr. UTLEY. Without going back to reckon the last year under the trustees, I think it was about \$40,000. I can tell in one moment. Yes, it was about \$40,000.

The CHAIRMAN. On an income of what?

Mr. UTLEY. On an income of \$149,635. The expenses were \$108,695, leaving between \$40,000 and \$41,000.

The CHAIRMAN. What is your proposed plan of improvement of this canal and river?

Mr. UTLEY. Shall I not give you the net revenue of the next year?

The CHAIRMAN. If you please.

Mr. UTLEY. In 1871 it was about \$53,000 net, and in 1872, from tolls alone, about \$80,000. The net revenue, though our lands are mostly disposed of, in 1871 was \$40,000, and in 1872 about \$120,000.

The CHAIRMAN. I think you stated the tolls of those respective years, but I have forgotten the figures.

Mr. UTLEY. The tolls in 1870 were \$238,000.

The CHAIRMAN. No, sir; I mean the rate of tolls.

Mr. UTLEY. The rate of tolls previous to 1869 was four mills on corn, taking it as a basis, per thousand pounds; that is eight mills per ton per mile. In 1869, it was reduced to three and a half mills per thousand pounds per mile. In 1872, it was reduced to three mills per thousand pounds per mile.

Mr. DAVIS. You spoke of lands. Those lands were donated by the Government, were they not?

Mr. UTLEY. Yes, sir; in a very early day.

Mr. DAVIS. When was that, and how much was donated.

Mr. UTLEY. I am unable to state. Perhaps Mr. Anderson can tell.

Mr. ANDERSON. I think it was every alternate section for ten miles in width along the line of the canal. It was as early as 1831. I think the first survey was made on the line of this canal and the feeder in 1831.

Mr. UTLEY. The improvement of the Illinois River was suggested many years ago, and surveys made, both by authority of the United States Government and the State government.

Mr. DAVIS. When did the canal come into the hands of the State?

Mr. UTLEY. That was on the first of May, 1871.

Mr. DAVIS. Did the General Government ever make any appropriation toward that canal in money?

Mr. UTLEY. No, sir.

Mr. DAVIS. Only in lands?

Mr. UTLEY. Nothing but lands.

Mr. DAVIS. Are any of the lands yet in possession of the canal company, or have they all been sold?

Mr. UTLEY. There are a very few lots of small value; a very few indeed. The larger amount of the land was sold many years ago at a small price.

Mr. DAVIS. Will you be kind enough to give the size of the canal and the locks, and what you consider its capacity?

Mr. UTLEY. The canal is 60 feet wide and 6 feet deep.

Mr. DAVIS. Sixty feet top or bottom?

Mr. UTLEY. Sixty feet on the top, with slope of one and a half to one, making 42 feet on the bottom, and 6 feet in depth.

Mr. DAVIS. How about the locks?

Mr. UTLEY. The locks are 103 feet long, I think. I have not the data with me that I ought to have to answer that question.

Mr. ANDERSON. One hundred and six feet.

Mr. UTLEY. One hundred and three feet, I think, and 18 feet wide.

Mr. DAVIS. What capacity of boats do you let through?

Mr. UTLEY. One hundred and sixty tons.

Mr. DAVIS. Do you experience any want of water in dry weather?

Mr. UTLEY. No, sir; we have plenty of water. We draw now from Lake Michigan.

Mr. DAVIS. How much are your lockages?

Mr. UTLEY. The lower mitre-sill of the lock at La Salle is 145 feet lower than Lake Michigan, making 145 feet of lockage.

Mr. DAVIS. Is that regular, so that you can get your supply from Lake Michigan at all times.

Mr. UTLEY. At all times; yes, sir.

The CHAIRMAN. Through this cut?

Mr. UTLEY. Yes, sir, through this deep cut.

Mr. DAVIS. Did you name what the distance was?

Mr. UTLEY. It is about a hundred miles from Chicago—the canal proper. I think it is between ninety-six and ninety-seven miles in length.

Mr. DAVIS. Do you know the cost of the canal?

Mr. UTLEY. I do not.

Mr. NORWOOD. Have you not some report that gives that data?

Mr. UTLEY. Yes, sir; but I haven't them at my hand, except the last report of the canal commissioners.

Mr. NORWOOD. You will be able, however, to furnish the committee with those papers?

Mr. UTLEY. Yes, sir.

Mr. DAVIS. It is stated by Mr. Brainard that a little over eight millions of dollars was the cost of the canal.

The CHAIRMAN. Mr. Utley, can you furnish us reports of your company, and of the operations of the canal in your State, for several years past? If so, it will save a great many questions that we would otherwise ask you now?

Mr. UTLEY. It is possible that we may find some old reports, but it is rather difficult to get them.

The CHAIRMAN. Then I will ask you one or two questions at the present time. Can you state the relative economy of transporting by the canal under the State management, and under the company management? I mean the comparative charges. Which is the higher?

Mr. UTLEY. The tolls are less under the State management, and the cost of repairs has been a little less under the State management. I think I am right about that.

The CHAIRMAN. How are the net profits under the State, and under the company management?

Mr. UTLEY. The last year, under the management of the trustees, the net revenue was about \$40,000, and the last year, of 1872, under

the State, it was about \$120,000 that we deposited in the State treasury, saving enough to carry us through the winter.

The CHAIRMAN. Have you tables before you from which you can state the tonnage of the canal for several years past?

Mr. UTLEY. I presume I can find that. I have here a table of the articles cleared, on the Illinois and Michigan Canal, in 1871 and 1872, at the lock at Henry. I have at home a statement of the kind you speak of, which I will furnish to you.

The CHAIRMAN. Will you be kind enough now to state to us the proposed enlargement and improvement of this line?

Mr. UTLEY. I know of no proposition for the improvement of the Illinois and Michigan Canal at the present. The improvement of the river seems to be the great desire of the people, and the construction of the canal from Hennepin, across to Rock Island. If you wish to know what has been done in reference to the improvement of the Illinois River, I can state it.

The CHAIRMAN. We should be glad to know.

Mr. UTLEY. As I stated before, surveys were made in an early day, and a good deal of interest taken in the matter about 1867, and surveys were again made. In 1865, I think it was, but I am not certain as to the date, Congress made an appropriation of \$85,000 for the improvement of the Illinois River and the dredging of that river. Little work was done, and the money diverted by order of the Secretary of War to the improvement of the Rock Island rapids, as there was hardly a sufficient sum appropriated to do much good. In 1869 the legislature of the State passed a law making an appropriation of \$450,000 for the improvement of the Illinois River by constructing a lock and dam below La Salle, or between La Salle and Peoria, and appointed commissioners. Under that law we were appointed, and we located the lock at Henry. It became necessary then to have dredging done. In the same year Congress had made an appropriation of two millions, I think, to be expended under the direction of the Secretary of War, for the completion, repair, or preservation of the various works of the West. Under that law the Secretary of War allotted \$85,000 for the improvement of the Illinois River, which was expended under the direction of the then Chief of Engineers in dredging below Henry. The plan agreed upon between the commissioners and the Chief of Engineers was this: that wherever locks were to be built, there should be a line drawn from the lower miter-sill of the upper lock to the upper miter-sill of the next lock below, and the tops of the bars dredged off it; otherwise we would have been under the necessity of building the dam so high that it would overflow a large amount of country and entail large expenses upon the State. That agreement has been carried out on the part of the Government of the United States and of the State government.

The next year Congress made an appropriation of a hundred thousand dollars. That was also expended in dredging below points where the \$85,000 was exhausted. According to our plans the size was about 350 feet long for the lock between the miter-sills and 75 feet wide. In adopting so large a plan the reason was, not because the needs of commerce demanded a lock of that size, but the United States engineers had determined that it should be of that size to pass gun-boats; not that gun-boats are 350 feet long, but to give 7 feet of water they must also construct camels to buoy up the boats to pass them through. The amount of water that was determined upon was 7 feet in depth, and not less than 3 feet wide at any point.

The lock at Henry and the dam was built at a cost of \$400,000.

The last legislature made an appropriation of \$430,000 for the construction of another lock and dam at Copperas Creek, sixty miles below the lock and dam at Henry, and, as I said, the State legislature having made an appropriation of \$430,000 and Congress an appropriation of \$100,000, and the appropriation made by the State government not being available until \$100,000 was accumulated from the tolls, we applied to the United States authorities to assist in building that lock by putting in a foundation. The dredging is of comparatively small cost, however, and the building of locks and dams is a large cost; consequently, they are far ahead of the State in their part of the work. The United States authorities determined to put in the foundation of the lock at a cost of about \$80,000. The contract is let, and the work is progressing. The foundation of the lock is to be completed by the 1st of May. We hope then to have a sufficient amount of money, and we have no doubt of it, to go on and complete the locking at Copperas Creek.

THE CHAIRMAN. What is the estimated cost of the improvement of the Illinois River to give you through connection from the Chicago to the Mississippi?

MR. UTLEY. The cost of the system of locks, being five in number, is estimated at about \$2,200,000, and the cost of the dredging about \$430,000. And I will say right here, that the State legislature, in consideration of the United States Government doing what they have done, and what they propose to ask them to do, to complete the dredging, have passed a law allowing United States troops, munitions of war, and any other property of that kind, to pass forever free of toll, and have obliged themselves to keep the work in repair.

THE CHAIRMAN. What is the estimated cost of the Hennepin improvement from Hennepin to Rock Island, with the feeder from Dixon?

MR. UTLEY. Before I answer that I wish to make another statement. The distance from La Salle by the Illinois River to its mouth, at Grafton, is about two hundred and thirty miles. The fall is 29 feet and 4 inches, and, consequently, by the erection of five dams we create a pool from one dam to the other, making two hundred and thirty miles of navigable water 7 feet deep. In reference to the characteristics of the survey of the canal, that canal was surveyed by the citizens in 1866 by Colonel Hudnut, and his estimated cost of the work was \$4,500,000.

THE CHAIRMAN. That is for the Hennepin improvement?

MR. UTLEY. Yes, sir; across to Rock Island. The length was sixty-four miles from Hennepin to Rock Island of the main canal, and the length of the feeder from the summit to the Rock River at Dixon was thirty-eight miles, making a hundred and two miles of canal 6 feet deep and 60 feet wide.

It has been since surveyed by the authority of the Secretary of War—I think, in 1871, by Mr. Lowe, under the direction of Colonel McComb. His estimate of the cost, material, and labor, being cheaper than it was in 1855 and 1866, is \$3,899,000. I have looked over the estimates very carefully, in consultation with Colonel McComb and other eminent engineers, and I have no doubt three millions and a half of dollars would build that canal. That would strike the Mississippi River and accommodate the upper part of the Mississippi, and they would be enabled to reach Chicago and save about two hundred miles, from Rock Island down to the mouth of the Illinois River. Of course a great portion of Iowa and of the western portion of Wisconsin, and much of Minnesota and the western part of our own State, would be greatly accommodated by the construction of that canal.

The CHAIRMAN. It was proposed in 1862, in Congress, to enlarge the Erie Canal and this Illinois River Canal to a depth of 10 feet, for the passage of gun-boats; what do you think of the practicability or desirability of such a canal through here?

Mr. UTLEY. I think it is very desirable that there should be a connection between the Mississippi River and the lakes. A treaty stipulation, which you know more about than I do, confines our United States marine to a very small point on the lakes. I think it is very desirable that the connection between the Mississippi River and the lakes be made complete.

The CHAIRMAN. What do you think of the practicability of a canal of that depth from here to the Mississippi?

Mr. UTLEY. It would be very expensive indeed.

The CHAIRMAN. And not necessary for the purposes of commerce?

Mr. UTLEY. No, sir.

Mr. NORWOOD. I have not had the good fortune to understand your statements, Mr. Utley, for want of a map. Do your reports give the cost of this construction—the percentage that the tolls have paid upon the cost, the variation for each year of the receipts, and so on, so that we, by getting hold of those reports, can have all that information before us?

Mr. UTLEY. So far as the Illinois and Michigan Canal is concerned, we have all that data.

Mr. NORWOOD. I am speaking of the first canal which you spoke of.

Mr. UTLEY. Yes, sir; we have all that data.

Mr. DAVIS. I understand you, that is the only canal now in operation in the State?

Mr. UTLEY. Yes, sir.

Mr. DAVIS. Except that there is one on the Wabash River improvement.

Mr. UTLEY. Yes, sir; that is a small matter.

Mr. DAVIS. Is that in the hands of the State?

Mr. UTLEY. Yes, sir.

Mr. NORWOOD. Will those reports show the amount that was expended directly out of the State treasury, as well as the receipts from lands donated by the Government?

Mr. UTLEY. Yes, sir; I think they will, if you can find them. Some of them are very old, but I think that they can be found. I will make an effort, at least, to have them sent to you.

The CHAIRMAN. I wish to ask one additional question. How do you account for the small amount of business done by this canal? It is situated in a very populous and very productive country, and I want your theory.

Mr. UTLEY. My theory is, that no canal of so short a length, unless under very peculiar circumstances, can be made to pay any profit. The great advantage is to people living upon the line of the canal, in reducing transportation. Now, if we had perfect navigation of the Illinois River, so that people could afford to build tug-boats, steamers, and canal-boats to do the business, the tolls would necessarily be largely increased. Then it would connect the great lakes with the Mississippi and its branches, having more than fifteen thousand miles of steamboat navigation. I think, sir, that its importance cannot be over-estimated.

The CHAIRMAN. Your theory of the small tonnage now is, that it has no through connection?

Mr. UTLEY. Yes, sir; that it has no through connection.

The CHAIRMAN. The Illinois River not being reliable.

Mr. UTLEY. That is it, sir. To prove that, you can see that we have had rather a wet season, and the tolls have vastly increased. The bars in the Illinois River are so prominent that in many seasons above Henry, where we constructed the last lock, there would not be but 16 inches of water. Last week I sounded about Copperas Creek and Point, and found but 2 feet and 1 inch of water, and now we have not boats enough on the canal to do the business of the canal.

The CHAIRMAN. Those boats are furnished by private individuals on the same principal that the Erie canal-boats are furnished.

Mr. UTLEY. Yes, sir.

Mr. DAVIS. Without your canal do you think that the railroad-freights would be the same as they are now?

Mr. UTLEY. No, sir. If we had no canal they would be the same as they were on other roads where they have not the canal to compete. Previous to the last law and previous to the 1st of July the charge was about 10 cents for a hundred miles from Chicago, and about half that sum by the canal.

Mr. DAVIS. You speak of previous to the recent law. What effect has the recent law had upon railroad freights in your State generally?

Mr. UTLEY. Well, sir, I am not very familiar with the subject, but from my observation it has increased the cost from some points and decreased it from others. From points about a hundred miles from Chicago it has decreased the cost, I think, somewhat, say 2 cents a bushel on corn. I believe that is the effect on the Northwestern road. On other property the difference is very slight—less than a cent a hundred pounds. I am speaking from my own observation. On the Northwestern, at Dixon, it is 45 cents a hundred for second-class freight, or 44 cents and a fraction. It was 45 cents previous to the 1st of July.

Mr. DAVIS. Are the railroads recognizing the right of the legislature and complying strictly with the law that passed, or do they call it in question and do as they please?

Mr. UTLEY. Well, sir, I am not thoroughly posted upon that point.

Mr. NORWOOD. From an improvised map of the country, which I have before me, I see La Salle is less than half the distance from Chicago to the Mississippi. Do I understand you now that the commerce over this canal has, none of it, been drawn from the Mississippi River through the Illinois?

Mr. UTLEY. Very little, indeed, sir. During the high water in the spring we had, up at La Salle, steamers from Saint Louis, and from Pittsburgh, and Cincinnati, but it was only during the season of high water, which is very short.

Mr. NORWOOD. So this traffic has all been local?

Mr. UTLEY. Yes, sir; it has all been local.

Mr. NORWOOD. What would be the necessity of a canal from Hennipin to Rock Island, if the canal through the Illinois River, with the improvements, were put in good condition, to transport the freight of the Illinois to Chicago?

Mr. UTLEY. It saves about three hundred miles of transportation for two-thirds of Iowa, all of Minnesota, half of Western Illinois, and all of Western Wisconsin which desires to reach Chicago. The mouth of this canal is more than two hundred miles above the mouth of the river. The Illinois River, you will notice by the map, runs for quite a long distance nearly directly westward. Then, at Hennipin, in a south-south-westerly direction, until it unites with the Mississippi River about forty miles above Saint Louis, and Rock Island is not more than thirty or forty miles farther South than Chicago.

Mr. NORWOOD. How far is Rock Island from the mouth of the Illinois ?

Mr. UTLEY. Over two hundred miles.

The CHAIRMAN. And the point of intersection on the canal and the river would be above the rapids ?

Mr. UTLEY. Probably so—yes, sir ; I am not positive about that. And with reference to that survey, it is supposed by everybody who is conversant with the subject that a better line could be found. The time was very short ; the engineers had but a very short period to explore the country, and to secure the very best possible line which could be found. On this Rock Island Canal, or feeder, there would be no locks ; by raising the dam on the river at Dixon 2 feet. That gives the proper declivity to the summit of the canal. The Mississippi River at Rock Island is considerably higher than the Illinois River at Hennipin. The lockage from the summit, westward, is about eighty-odd feet, and it is over a hundred, eastward, toward the Illinois River, showing the country to be much lower at Hennipin than the Mississippi River at Rock Island.

H. D. COOK, chairman of the Board of Railroad Commissioners, examined.

The CHAIRMAN. Mr. Cook, will you be good enough to inform the committee of the nature of your appointment, the authority granted you by the legislature, and the general outline of your duties under the constitution of this State ?

Mr. COOK. Answering for our committee, the first law passed authorizing the appointment of a board of railroad commissioners was April 13, 1871. The duties set forth in the act were in brief something like this: that the board was to examine into the general business transactions of the various railroad companies, and the law also included the warehouses in all cities having a population of 100,000. Consequently Chicago was the only city in the State that gave the commissioners jurisdiction over the warehouses, the storage of grain, &c., and the manner in which it should be received and delivered by the various elevators, with the right to fix certain rates, &c.

The first board was appointed in July. Their duties commenced, I think, on the 1st of July, 1871, and they were continued in office until March last. During that time they made reports as required by law to the general assembly, in reference to the result of their labors ; they classified the various roads of the State under the law for passenger fare, and performed all other duties, so far as they could under the law, ascertaining the cost of the various railroads of the State, the number of miles in operation and in construction ; all of which is embodied in the report of the board to the governor.

In March last the present board was appointed, or rather they were not appointed, but they acted under the act of May 3d, 1873, which was a law passed to cover points that had not been covered by any previous law. The present board have been acting under this law specially. It provides that the railroad and warehouse commissioners shall make a schedule of maximum rates of charges for the various railroads in the State, both of freight and passengers. The schedules of rates under the law are to be published as soon as completed by the board ; they are now being published. Some of them have been issued. We have an official copy here. It is the longest that will be published, including a distance of five hundred miles. That is the greatest distance represented by any road in the State.

The board has spent their time almost continuously in preparing

these schedules since their appointment, and this shows the result of our labors in that direction. I will leave this document here for the committee, and they can examine it at their leisure.

The law requires that these schedules be published three weeks in any paper in the city of Springfield, the capital of the State. They are now being published from week to week for the various roads, as fast as they can get them in, and the schedules have been substantially prepared for all of the railroads in the State upon that basis.

The law provides that those schedules, after the 15th day of January next, or ten days after the next meeting of the next legislature, shall be taken and held in all the courts of this State as *prima-facie* evidence of reasonable maximum rates, thereby changing somewhat the burden of proof from the commissioners, or the people, to the railroad corporations, to show that they are not reasonable maximum rates. That duty would devolve upon them.

I need hardly say to the committee that, perhaps, a duty so broad, involving interests so great, has seldom been imposed upon three men in any portion of the country, and the effort of the board has been to arrive at just and fair conclusions, as between the railroad corporations of the State and the people.

It had no other object in view. In order to attain this object the board has availed itself of all the means within its reach. Those means consisted first of comparison of rates between the various roads in the State, from the organization of the railroad system in this State down to the present time, as well as the variations between the various roads leading from different points to different points, both in and out of the State. We also took into account the earnings of the various roads in the State.

In addition to that, we have called before us some men who were well versed in the railroad interests of the State and the construction and operation of roads; and we have also called before us leading shippers of the State, from various parts of it, in order to determine from their experience what rates they have paid from time to time, and what, in their judgment, would be reasonable rates. We have questioned all the men who have been before us upon that point very closely. The result of this investigation is this schedule in part. Schedules which we have prepared for the various roads in the State will not be all of the same figures. I will, however, say, that there are some nine or ten main roads in the State that the board could see no just reason why there should be any difference in their rates of charges, and that schedule will cover about that number of the most important roads in the State. That is about the basis we have acted upon to arrive at the conclusions which you will find embodied in that schedule.

The CHAIRMAN. On that point did you take evidence of the actual cost of movement in the State?

Mr. COOK. Nothing very definite in regard to that, except what is embodied in the reports of the various railroad companies to the old board of commissioners. We have a statement here, made up from a report of the former board; and I will say here that the railroad corporations are required to file their reports each year by the 1st of September, setting forth in their reports the number of miles operated by the company, gross earnings of the company, and also including the cost of construction, its indebtedness, &c., and the amount of freight transported over their various lines, and number of passengers. Their report shows that about 65 per cent. of the gross earnings of the road is absorbed in keeping up the railroad and operating it.

I will, however, say right here, that the present board is compelled to fall back upon that report, from the fact that the various railroad companies have not been yet returned for this year, and hence we have been compelled to refer to the previous report of the various companies made last year to the board. We shall, however, before making our report to the governor this fall, have the reports of all the various roads in the State, and our report to be made this fall will be based upon the new reports which will be submitted to us. Some of them are in already, and some of the companies are asking for further time. Those reports should all have been in, as I said, by the 1st of September, but they are now coming in pretty rapidly, and we hope to be able to have them all very soon.

The last report shows on the 1st of July, 1872, 6,258 miles of railroad in the State in operation and completed. It also showed that there were in process of construction 1,587 miles of railroad, and that since that time we have evidence to show very conclusively that three-fifths have been put in operation, so that we can now safely say that we have about 7,000 miles of railroad in operation in this State. The average cost of these roads, as reported by the companies, is \$42,264.48 per mile.

Mr. DAVIS. Do you separate the single and double-track roads?

Mr. COOK. Well, sir, we have no double-track roads in this State complete. Some are now in process of construction. The Chicago and Alton have commenced double-tracking their road.

The CHAIRMAN. Do you know how they make up that cost? Does it include the ordinary statements of the stock issued?

Mr. COOK. It includes the common and preferred stock, and bonded and floating debt of the companies.

The CHAIRMAN. In making that estimate of course the roads did not go into any statement as to the amount of money received by this stock, but put down the whole amount of stock issued, and the whole number of bonds issued as the cost of the road.

Mr. COOK. Yes, sir.

Mr. DAVIS. Have they, in any case, added their earnings to their capital?

Mr. COOK. I do not know that I understand the question.

Mr. DAVIS. For instance, it costs 65 per cent. to run the road, and it might have cost half of that to pay dividends.

Mr. COOK. Dividends are not included in that at all.

Mr. DAVIS. But after the running expense and the dividends, some of them call it surplus, and some carry to profit and loss; is that added in your figures?

Mr. COOK. The expenditure of an average of 65 per cent. is for operating and keeping in repair.

Mr. DAVIS. Working expenses?

Mr. COOK. Yes, sir; working expenses and repairs of the road, and rolling-stock, &c.

The CHAIRMAN. If Mr. Davis will excuse me, what I think he means is, whether the roads have been in the habit, in this State, of capitalizing their expenditures for construction and equipment.

Mr. COOK. Yes, I understand that; that is embodying the whole in the gross; that is, including the rolling-stock, &c.

Mr. NORWOOD. And to the rolling-stock that is added from time to time, as I understand you?

Mr. COOK. The whole amount of capital invested, as reported by the roads up to the date of the last report, is \$254,912,563.45. That includes

the construction of the roads and the rolling-stock, so far as reported by the companies; in other words, the total expenditure to prepare the roads for business.

MR. NORWOOD. Does that mean original cost?

MR. COOK. They claim \$42,000 per mile as the representative cost of constructing these roads. That represents the entire indebtedness of the road. The amount of actual cash invested in these roads I have never been able, as I understand, to fully ascertain. They claim this amount of capital as representing these roads.

MR. NORWOOD. What I want to understand is this: Do they mean, Mr. Cook, that that is what the roads cost when they were originally constructed, or what they stand them in hand now, including all expenses, repairs, additions to rolling-stock, betterments, &c.

MR. COOK. The repairs of the road, as a matter of course, are not included in the cost of construction. It does include, however, as I understand from their reports, side-tracks, station-buildings, and everything of that kind necessary to operate the road, to receive and deliver freight, &c., but operating expenses embraced in the average of 65 per cent. of these gross earnings of the road is for operating and keeping in repair the road and the rolling-stock.

MR. DAVIS. That is excluded, of course.

MR. COOK. Yes, sir.

THE CHAIRMAN. Are you able to state the average percentage of net profits made by the roads in this State on their capital?

MR. COOK. We do that, of course, from their reports. The average gross earnings of the road a mile is \$8,108.06. Deducting the 65 per cent., &c., leaves a net earning of \$2,789.18 per mile. That, however, does not include dividends paid, but, according to their report, it leaves a net earning of that amount to be used in paying dividends on the amount invested.

THE CHAIRMAN. Dividends and interest on indebtedness?

MR. COOK. Yes, sir.

THE CHAIRMAN. Do you know of no way by which we can arrive at the actual cash cost of these roads?

MR. COOK. We have been unable to reach that thus far. We can approximate only. The railroad companies up to this time have declined to give exactly the specific amount of cash invested.

MR. NORWOOD. Have you made application to them for that information?

MR. COOK. Yes, sir. We issued blanks, upon which they are required by law to make reports. Some of the important questions, however, they do not answer definitely, and give various reasons therefor. As a general thing they claim that the best means they have of knowing the cost of the road is what the road represents.

THE CHAIRMAN. From your knowledge of railroad matters and of the character and topography of the country, the cost of materials, &c., what is your belief as to that representing anywhere near the exact cost of the road?

MR. COOK. Well, sir, we think that it very much overestimates the cost of roads in this State. I have had considerable to do with constructing roads in this State, when the Illinois Central was being built, from time to time.

MR. NORWOOD. Let me ask you right there, when you say it is an overestimate, what do you include in the estimate of the road? Your opinion, you say, is that \$42,000 is an overestimate of the cost of these roads per mile. What do you include, in forming that judgment,

or coming to that conclusion, in your estimates. ? Do you mean the original cost and equipment only, or do you add anything to that ?

MR. COOK. I suppose it is proper to say that it is generally understood, or at least conceded, in this State, that railroad-stock has been from time to time pretty largely watered—that stock has been issued that does not exactly represent the capital invested.

THE CHAIRMAN. I understand the forty-two thousand represents the roads as they stand to-day, with all their improvements, their rolling-stock, buildings, and everything that goes to make up the existing road ?

MR. COOK. Yes, sir.

THE CHAIRMAN. Now, taking these roads in their present condition, and from your knowledge of them, my question was whether you believed or did not believe that that was a correct estimate of the cost.

MR. COOK. I am very sure that it is an overestimate.

MR. NORWOOD. What makes you think so ?

MR. COOK. Taking my knowledge of the construction of the roads originally, I do not think the original construction of the roads in this State would average a cost of \$22,000 per mile. I know that a good deal of the Illinois Central was constructed for a good deal less than that. But, as a matter of course, that does not include ballast which has since been placed upon a good many of the roads. Some buy gravel and some buy stone. As to the exact cost of that, of course I would not undertake to say.

MR. DAVIS. Does it include the rolling-stock ? That would have to come in, would it not ?

MR. COOK. Yes, sir, rolling-stock would have to come in. I know several important parties, who were engaged in constructing the Illinois Central, informed me at the time, when I was in the employ of the company, that a great many miles of that line were constructed, and the grading made, and the iron laid ready for the cars, at a cost not exceeding \$16,000 a mile.

MR. NORWOOD. Do you mean the cost to the contractors or to the road itself ?

MR. COOK. Well, sir, I was in the employ of the company, and I also talked with the contractors, and also with men who superintended the line after it was constructed and running.

MR. NORWOOD. You mean, then, that was the cost of the road itself—\$16,000 a mile ?

MR. COOK. Yes, sir; and I presume a great many miles were built for even less than that. Of course I would be willing to concede that the average, including bridges, and perhaps expenses of cuts, and things of that kind, would be larger, but I do not think that it could exceed \$22,000 a mile to get the track ready.

MR. NORWOOD. If you have any opinion on the subject at all will you please tell us how you think the railroads have made up the excess of \$20,000 a mile between your estimated cost and \$42,000 which they state ?

MR. COOK. Well, sir, I have no knowledge of that except what is gathered from their reports. I did not include in my original estimate of the cost of the track when ready for the rolling-stock, a great many things which they have since added—station-buildings and things of that kind. I merely referred to the road. But I would include in the \$22,000 a mile the necessary station-buildings. Buildings were not costly at the time. Of course they have built a good many more expen-

sive buildings since the roads have been completed, and have been adding from time to time.

Mr. NORWOOD. Do their tabulated statements show the items that make up this \$42,000 a mile?

Mr. COOK. Perhaps it would be well for Mr. Pierson to read to the committee a statement in relation to that.

Mr. PIERSON. They give no items that make up that \$42,000. They say, "presume the road costs thus and so."

Mr. COOK. Hence we are to take their conclusions without any details furnished by them.

Mr. DAVIS. It is the details I want to get at.

Mr. COOK. Well, sir, we are very anxious to get at the same thing.

Mr. DAVIS. Did I understand you have not been able to get at them?

Mr. COOK. That is a point that the railroad companies in this State did not desire either this committee or this board to have definite information about.

The CHAIRMAN. What are the chief causes of dissatisfaction on the part of the people with the present railroad management?

Mr. COOK. The chief causes of dissatisfaction may be all embraced, perhaps, in two classes: one is exorbitant rates, or what we term extortionate rates, and unjust discrimination. The first, of course, embraces excessive charges, that the railroad companies have been charging more than they were fairly entitled to for the service performed, and I think, as a general rule, the history of railroads in this State shows this fact: that as the State has been developed and the business of the roads increased, charges for freight have been increased. That is somewhat reversing the general order of business.

In forming these schedules, I will say, right here, that nearly every railroad man who has been questioned by this board as to the basis upon which they make up their schedules of rates, told us very frankly that they have no basis except to make a schedule to suit their trade—that where they find a place where some money can be made, they make it; and the rule has been at points of competition to endeavor to secure by a reduction of rates a proportion of the transportation business from those points, and to make up the deficiency between those points. That, of course, has excited a good deal of feeling in this State, it being looked upon as unjust discrimination. For instance, here is a competing point. Their published rates would be thus and so, but they have paid no regard to that; and, in fact, the published tariffs of the railroads of the State do not represent fairly, or anything like it, the manner in which their business has been conducted. A distinguished railroad man in the State remarked a short time ago that when he came to look at their schedule and then at their private contracts, and how they had been doing their business, he discovered that hardly anything had been done at their published rates.

Mr. NORWOOD. Do they under-cut?

Mr. COOK. Yes, sir, at these competing points they do; and what the people have complained of is this, that while perhaps the rates from competing points, where various railroads center and terminate in Chicago from the various parts of the State, some running off East, two or three lines starting from a given point and diverging as they pass through the State, and finally reach the same terminus East, there has been pretty sharp competition at some points, and as a general thing they have run the rates down to something like a pretty fair rate, although the leading railroad men in the State, I may say, stated before a committee of the legislature, last winter, that they never made even

special contracts that were not remunerative. But from these points you go ten, fifteen, twenty, and perhaps fifty miles, and from other points, perhaps, ranging from twenty-five or a hundred miles, starting from these competing points, freight has been charged more for transporting it a hundred miles less, or fifty miles less, as the case may be. In other words, just as soon as they would get beyond the reach of these competing points, the tariffs have been graded up to about what they would bear, and that is the kind of discrimination of which the people complain in the State. The law of May last was designed to remedy that, and based, or supposed to be based, at least, upon the common law, that a greater amount should not be charged for a less service, or for transporting freight over a less than over a greater distance of road. While the law does not, perhaps, exactly pro-rate, yet they say it must be something less, the distance being less, although the law admits the discrimination on account of quantity, &c. And that is the basis upon which our schedule is made up.

The CHAIRMAN. Do you remember about the average charge per ton per mile of the roads of this State?

Mr. PIERSON. Some of them do not give it at all. Some of them give it in estimated gross quantities; and when they do give it, it runs from a cent and a quarter to a cent and a half.

Mr. COOK. To go back a little at this point, it may be proper to say that in the first place the railroad companies decline to make any report. This has only been in operation some two years, and finally, when they commenced making reports, they were, many of them, so indefinite and unsatisfactory, that we could not possibly arrive at any definite conclusions in reference to the general average of the cost per ton per mile through the State. We have added several new questions this year in our blanks sent out to the various companies, and some of them, in fact most of them, thus far, which have been coming in, have been very satisfactory, and they are gradually, I think, growing into a more full and perfect report of the condition of the company.

Mr. DAVIS. What is your own idea of their average per ton per mile? You haven't it, I understand you, officially, but you have some idea of it yourself, I suppose.

Mr. COOK. We have done some figuring on that point. Of course there is a difference in transporting various kinds of freight.

The CHAIRMAN. We mean fourth-class—cereals.

Mr. COOK. It will average, we think, from seven mills to a cent per ton per mile, and perhaps a fraction over that.

The CHAIRMAN. The actual cost, do you mean—the money paid out by them?

Mr. COOK. Yes, sir.

Mr. DAVIS. By the companies?

Mr. COOK. Yes, sir; that includes everything; the use of their road, &c.

The CHAIRMAN. The cost of running the train and keeping the road and rolling-stock in repair?

Mr. COOK. Yes, sir; everything necessary to perform the service.

Mr. DAVIS. What is the average charge, in your opinion, through the State?

Mr. COOK. I do not know that I am prepared to answer that question exactly. [To Mr. Pierson.] Have you ever made an estimate of that?

Mr. PIERSON. Not taking the whole of the roads into consideration. Their rates vary so much that it is very difficult to tell.

Mr. COOK. We shall undoubtedly arrive at some definite conclusion

upon that point in our report, but as I stated to the chairman of the committee yesterday, in private, our time has been pretty much entirely absorbed upon these schedules, and we have made a good many minutes, which we have left to be further considered.

Mr. NORWOOD. Will that report be made between this and December?

Mr. COOK. Yes, sir. Our report is due on the 1st of September to the governor, but it will have to be published after that.

Mr. DAVIS. You will probably send a copy to the chairman of our committee?

Mr. COOK. We would be very happy to. We hope also to receive something from the committee.

Before I pass on further in reference to this matter, I desire to say, that the people have universally complained on account of the excessive rates for short distances. I think no man can come to any conclusion but this, that their rates for short distances, from one to twenty, forty, sixty, or a hundred miles, have been excessive always. If you have time to compare our schedule with theirs, you will discover that the great difference between them and us is, for these shorter distances. In some cases, even, we overreach them a little, but in making their schedules they have not only done that, but, for instance, after transporting freight a hundred miles, they will reduce largely for the next hundred miles, and for the third hundred miles possibly increase largely. Now, we think there can be no reason for that, and railroad men have generally told us, that, after they have transported freight for one hundred miles there is but little difference in the cost of transporting it another hundred miles. In other words, at the end of each hundred miles the train has to be examined, and a new engine fired up and brought out, and for every other hundred miles it is about a duplicate of that transaction.

There is, however, one charge which I think should be a permanent charge, and they have recognized that principle; that is, a fair, advantageous remuneration for the time occupied by a car in loading and unloading. That would be the same whether the freight was transported five miles or five hundred miles. The time of detention would be the same, and hence they would be, of course, entitled to a fair and reasonable charge for that on the start, which would necessarily make the rates for short distances higher per mile than for long distances, after you had reached a point where, as railroad men say, the increased expense could not be very much different from any previous hundred miles.

The CHAIRMAN. Did you encounter any difficulty on account of the interstate commerce in fixing your rates? I mean commerce passing from another State into, or through, yours.

Mr. COOK. Well, sir, we have had a good many questions asked about that. What we intended to do in reference to that matter was early asked by some of the important companies in the State, and we embodied our opinions in a circular which was issued, and which, very likely, you saw. I do not know that we can say anything further upon that point than what is set forth in our circular. That is the view we have taken. The railroad companies, of course, have been free, and exercise that freedom to ask all the intricate questions connected with the matter, and submitted them, while the more plain questions of the law have been left unattended to.

The CHAIRMAN. What I meant was, have you encountered any practical difficulty in fixing it growing out of these constitutional questions?

Mr. COOK. I do not consider it very technical, sir. We come to the conclusion which we think based it upon the common law. It was pre-

sented to the board as a question. Of course we did not claim the right to make a schedule from Chicago to New York City, or from Springfield to New York City, or from the west line of the State to any given point in another State, or from any point outside of the State to a point within the State. We merely claimed the right to say that citizens of other States should enjoy the same privileges within our own State that our own citizens enjoy, but we did not think that they should have any additional privileges in this State over our own citizens, and hence the commission said, in reference to that, that freight shipped from a point without the State to a point within the State should not be at less rates than our own people were charged, or freight was charged from, for instance, the west line of the State to some point of delivery within the State, giving the citizens outside of the State the same protection against extortion within the State that we claim for our own citizens.

And so in reference to freight being shipped from a point within the State to a point without the State. We say that it should not be done for less; for instance, freight should not be shipped from Chicago to Indianapolis at less rates than our own citizens were charged from Chicago to the east line of the State. And so in reference to freight passing through the State from Iowa, for instance, on the west, to some point east of the State. We say that the charges should not be less than from the west to the east line of the State. In fact, the principle is reached in this clause of the circular; also the charges from a point west of the State to a point east of the State must not be the same as or less than the charges over the same road from the west line to the east line of the State. The principle is that the charges for any distance within this State must not be the same or greater than the charges for a greater distance. That, as we understand, is an acknowledged common-law principle, and that is all we have said in regard to that matter. We have had no test cases, as yet, in the courts, and have not had time for them.

Mr. DAVIS. Is your board created by the constitution, or by an act of your legislature?

Mr. COOK. It was created by an act.

Mr. DAVIS. What authority does that give you to fix rates for the railroads? Have you positive authority upon that subject?

Mr. COOK. Yes, sir. I will read the eighth section of the act: "The railroad and warehouse commissioners are hereby directed to make for each of the railroad corporations doing business in this State, as soon as practicable, a schedule of reasonable maximum rates of charges for the transportation of passengers and freight and cars on each of said railroads, and said schedule shall, in all suits brought against any such railroad corporation wherein is in any way involved the charges of any such railroad corporation for the transportation of any passenger, or freight, or cars, or unjust discrimination in relation thereto, be deemed and taken in all courts in this State as *prima-facie* evidence that the rates therein fixed are reasonable maximum rates of charges for the transportation of passengers and freight and cars upon the railroads for which said schedules may have been respectively prepared." That is the authority under which the board prepared these schedules.

There is also a provision in the act, "*Provided*, That the schedules thus prepared shall be taken as *prima-facie* evidence, as herein provided, until schedules shall have been prepared and published as aforesaid for all the railroad companies now organized under the laws of this State, and until the fifteenth day of January, eighteen hundred and seventy-

four, or until ten days after the meeting of the next session of this general assembly: provided, a session of the general assembly shall be held previous to the fifteenth day of January aforesaid." The constitution of this State requires the passage of a law embracing those principles.

Mr. DAVIS. Do the railroads as a rule recognize your tariffs which you have made, and charge by it, or do they resist it?

Mr. COOK. We have no official information of that fact. The railroad companies, as a matter of course, resist any law looking to controlling them in that direction. Many of them, however, state that they are going to abide by the law after the first of July; but their construction of the law is evidently to render it odious, without any intention whatever, I have no hesitation in saying, of complying with that law; the object being, as I say, to render the law odious and secure its repeal; and in fact to abrogate every law, leaving them as they always have been heretofore.

Mr. DAVIS. Have there been any suits adjudicated yet, as to the right of the legislature to regulate the tolls of the railroad?

Mr. COOK. There has been one suit determined by the supreme court of this State.

Mr. NORWOOD. That is the case that has gone to the United States Supreme Court?

Mr. COOK. No, sir; none to the United States Supreme Court.

Mr. NORWOOD. Has not that case gone up?

Mr. PIERSON. No, sir; it went to the supreme court of our own State, which set the law aside—I mean the old law, which the last legislature repealed. No case has ever gone to the United States Supreme Court.

Mr. NORWOOD. Has any case ever gone through either of your courts under the present act?

Mr. PIERSON. No, sir. We do not wish to be understood that the legislature has given us the right to fix rates for these companies. That is not in the law, if you understand it so. That is not what we understand. We do not fix rates, but fix a schedule which shall be taken in courts as *prima-facie* evidence of a reasonable rate.

Mr. COOK. That law and those rates are maximum rates. They are not minimum rates. They leave the company to discriminate as they please under the law, except that the discrimination is not an unjust one, and what we would consider an unjust discrimination under the law would be to carry from a given point to a given point an equal quantity of freight of the same class in the same direction, and one rate for one individual and for another individual another rate. In other words, if the railroad company should decide to carry freight to Chicago for one individual a hundred miles at a given rate below ours, every other individual would be entitled to the same privilege under the law for a like quantity and quality of freight in the same direction for the same distance.

The CHAIRMAN. Just at that point I wish to ask you whether, after making these comparisons of rates, and in fixing upon your maximum, you have endeavored to fix the maximum as low as you thought would be just to the roads and to the community. That is, have you sought to fix as low a maximum as you thought the road could make reasonable profits under?

Mr. COOK. Yes, sir. We understand that there is reasonable room for competition under our schedules. We fixed our rates not so low as we believed freight could be carried for, but we fixed what we deemed, under the circumstances and present lights we have before us, and the course we have adopted to arrive at our conclusions as to what we be-

lieved to be reasonable maximum of rates. We thought that anything above that would be extortion.

Mr. DAVIS. If I understand you right, you do not pretend to fix the railroad tariff. You fix a general tariff for the State, which is taken in evidence if a case is carried through the courts.

Mr. COOK. Yes, sir. It is to prevent extortion and unjust discrimination. The roads may carry as much lower as they please, so that they do not unjustly discriminate between shippers.

Mr. NORWOOD. As I understand it, this is simply to furnish evidence in a case to determine what the lawyers call a *quantum meruit*, in case of a contest between the shipper and the road; that the roads, according to your schedule, ought not to be allowed to recover more than your schedule, because that is a fair compensation?

Mr. COOK. Yes, sir; that is it.

Mr. NORWOOD. And it rests, then, on the common-law principle, that a man can recover what his services are worth; that is the idea, is it?

Mr. COOK. Yes, sir; that is it exactly. Of course these schedules do not fully determine the case. You may introduce evidence of fact.

Mr. NORWOOD. Yes, I understand that. It is evidence to go to a jury, as a reasonable maximum charge that the roads should make, and that that would be a fair compensation for the services rendered, and to prevent them from putting on the charges, because they have the power to do so.

Mr. COOK. Yes, sir; and we, when we get into court, if the railroad companies can show to the satisfaction of the jury that our rates are not reasonable maximum rates, of course would be beaten.

Mr. NORWOOD. And then, of course, they could recover more.

Mr. COOK. Yes, sir; that is, we could not convict them of extortion under the law.

Mr. NORWOOD. That saves me from asking you several other questions about the authority under which you are acting. I wanted to get at that clause of your constitution which clothed the legislature with power to pass such a law; because it struck me as being rather singular that your constitution should embrace such a clause affecting railroads which had already been chartered.

Mr. COOK. The decision of the court in the case which was tried embraces the authority embodied in this law fully; that, notwithstanding what the charter of a company may be, yet the common-law principle requires that men should deal fairly; that they cannot be allowed to charge more than a reasonable rate for a given amount of service. That, I think, is recognized everywhere.

Mr. NORWOOD. Then the object of your board is to furnish a rule of evidence as to what are reasonable rates?

Mr. COOK. Yes, sir; and these schedules being made *prima-facie* evidence changes the burden of proof from the board to the company, requiring them to show that they are not reasonable.

Mr. DAVIS. In your examination have you found that the charters of the railroad companies fixed a maximum rate?

Mr. COOK. No, sir. Possibly recently there may have been something different in the charters; but, I think, as a general thing, the railroads chartered by the authority of this State are allowed to make rates and charges of their own.

Mr. DAVIS. Without a limit by law?

Mr. COOK. Yes, sir. I do not think there is any restriction in the charters.

Mr. DAVIS. In many other States it is different, and the charter makes a maximum rate.

Mr. COOK. Well, sir, that is not true of our State.

Mr. DAVIS. You recollect, for instance, the New York Central has 2 cents fixed as its extreme charge per mile.

Mr. COOK. Was that in the original charter of that road?

Mr. DAVIS. Yes, sir; I am so told.

Mr. NORWOOD. O, no; it was not in the original charter.

Mr. COOK. I was in New York State when that road was chartered and built, and I do not remember ever having heard that 2 cents was fixed in the charter as a maximum charge for the company. I know they used to charge a good deal more than that.

The CHAIRMAN. That is all they can charge now under the law consolidating the companies.

Mr. NORWOOD. (To Mr. Cook.) Can you state what percentage of reduction your board has made in rates that are charged now by your railroads?

Mr. COOK. No, sir; we have not aggregated the matter.

Mr. NORWOOD. Can you state what is the total capital stock of the roads through your State? Have you any tabular statements in regard to that? I remember the statement you made, but that did not cover my question. I want to know what is the total capital stock of the roads.

Mr. COOK. This report is of course based upon the reports of the various railroad companies. It is made up of four different items: preferred stock, \$8,155,199.68; common stock, \$131,970,864.60; bonded debt, \$111,456,325.97; floating debt, \$3,330,173.22, representing \$254,912,566.45. That is the report of the companies.

Mr. NORWOOD. That does not answer my question. It does not give separate items.

Mr. COOK. The common stock and preferred stock would be in the first two items.

Mr. NORWOOD. Do you know what percentage of the stock has been watered as it is called in your State?

Mr. COOK. No, sir, I do not. I do not know of any party who can give you that information, except the railroads themselves, and if they will not give it I do not know how you are to get it.

Mr. NORWOOD. Have you propounded that inquiry to them in your investigations?

Mr. COOK. We propounded questions in our blanks to that effect.

Mr. PIERSON. We asked the Illinois Central the amount of stock issued as stock dividends, and dates of issue, and they replied to that "no stock dividends made since the passage of the act establishing a board of railroad and warehouse commissioners." Their own report now shows that their stock was about eight or nine millions more than when they started their road.

Mr. COOK. You can see that they avoid those questions in various ways. The one that Mr. Pierson has stated is perhaps a fair sample of the manner in which they get around those questions.

The CHAIRMAN. A single word with reference to the warehouse branch of your jurisdiction. Have you taken any steps to change or regulate that in any way; and, if so, how?

Mr. COOK. Yes, sir. They are operating to a certain extent, at least, under rules and regulations prepared by this board. The same difficulty to some extent, however, is found in bringing their business under the special control and direction of the board.

The CHAIRMAN. Have you fixed any maximum charges for elevators and warehouses?

Mr. COOK. The law fixes that.

Mr. PIERSON. The law of the State is 2 cents for the first twenty days and 1 cent for every ten days. Our law is 2 cents for thirty days and 1 cent for every additional.

Mr. DAVIS. Does the law fix the rates of transferring from car to boat?

Mr. PIERSON. No, sir.

Mr. COOK. I would say to the committee that if we had had longer notice in reference to this matter it would have been better. The board had adjourned when we got the telegram of your chairman to come here, and we were about to disperse and go to our homes, and had other business in view. We were anxious, however, to see the committee.

Mr. PIERSON. I find that the cost of receiving and delivering, the first thirty days, or part thereof, is 2 cents a bushel; and for each fifteen days, or part thereof, after the first thirty days, is one-half of 1 cent. Their charge is the same now, except that they ask 2 cents for twenty days, and a half a cent for ten days. There is where the difference is; and we are trying now, by the courts, to force them to come to our rates.

Mr. DAVIS. Does that include cars and boats?

Mr. PIERSON. Yes, sir; either way that is the maximum.

Mr. DAVIS. Is that the general charge here; is that what they are working under now; is it a current rate here?

Mr. PIERSON. Yes, sir. •

The CHAIRMAN. No distinction is made as between cars and vessels.

Mr. PIERSON. The rate that the law prescribes is not the rate they are working under. They claim the same storage for twenty as the law allows them for thirty days.

Mr. DAVIS. I understand that it costs 2 cents for grain in transferring here, let it go by cars or boats, in going through the elevators.

Mr. COOK. Yes, sir; for twenty days. Even if it is transferred through it is the same.

Mr. CONOVER. If there is no stoppage or storage at all it is the same price, is it not? If it goes through the elevator it is the same?

Mr. COOK. Yes, sir; even if it is received and transferred the same day.

Mr. DAVIS. Does all grain that arrives by cars or by boat, and goes away, necessarily have to go through an elevator?

Mr. COOK. During the water navigation it may be transferred by floaters, or otherwise, transferring it by boats to the river; or boats may haul up alongside; but I suppose the quickest way is to put it through an elevator.

Mr. DAVIS. All that comes in cars and goes away in boats must go through an elevator, must it? I mean arriving in cars and departing in boats.

Mr. COOK. I do not know that it would be so necessarily, but it is best that it be so; and that is a system which every shipper would desire to avail himself of, because it is the quickest way, and undoubtedly the least expense in transferring. You can unload a train of cars within ten minutes. I would also like to have the committee understand that there is still an additional expense in the transfer of grain here, which is for the inspection. That is done by the State; and the general rate fixed by law for inspection is, on an average, about 50 cents a thousand bushels.

Mr. DAVIS. Is it optional with the owner to have it inspected; or must it be inspected?

Mr. COOK. The elevators have no right to receive grain and mix it without inspection. They have no right to deliver grain from their houses without inspection. If a party ships grain here, and does not desire it to be inspected, it can be placed in a separate bin in the warehouse, but cannot be mixed with other grain.

Mr. DAVIS. What did I understand that charge was, added to the 2 cents?

Mr. COOK. About 50 cents a thousand bushels for inspection.

Mr. DAVIS. I would like to ask one more question in regard to that elevator. They charge, I understand it, at Oswego, and at Montreal, perhaps, about half a cent, and a cent at Buffalo. Why does it cost 2 cents here and 1 cent there? Is there any reason for it?

Mr. COOK. The law provides that a revenue shall be raised from that source only sufficient to defray the expense of the service.

Mr. DAVIS. The storage I am talking about.

Mr. COOK. Oh, I thought you had reference to the inspection.

Mr. DAVIS. No; I mean the transfer, in other words.

Mr. COOK. Well, sir, I do not know that there is any reason for that. I see no reason why grain may not be transferred here as cheaply as at Oswego, or at any other point. I think we have as good elevators as can be found in the country.

Mr. CONOVER. How long do they generally keep the grain stored up before it is transferred out of the elevator?

Mr. PIERSON. In the winter they will keep it four months, sir.

Mr. COOK. That depends a great deal on the market.

Mr. CONOVER. In Buffalo the charge is a cent and a quarter, and grain can be kept in the elevator for five days. They say that they charge a cent and a quarter, and nothing for storage.

Mr. PIERSON. Then when it came to thirty days they would get it up as high as our own rates are here.

Mr. CONOVER. The question is whether it is not some advantage to the shipper by having a lesser price for five days. There certainly would be at more seasons of the year.

Mr. COOK. The same element that I named in reference to railroads making their rates for a short distance, that is, getting the money pretty soon, is urged in this storage business of 2 cents for twenty days; yet, if I put grain in to-day and take it out to-morrow it is 2 cents. So that it embodies the same principle in fact if it is not put in the bin at all, and only passes through a warehouse; and if the transfer is made in time, within twenty days, it is 2 cents.

Mr. CONOVER. And for the same thing at Buffalo they charge a cent and a quarter. Now, is it not of course an advantage having it at a lesser rate during a good part of the season?

Mr. COOK. Yes, sir.

Mr. CONOVER. Could that not be done as cheaply here on the same basis as it is at Buffalo?

Mr. COOK. Well, I know no reason why it could not be done, I am sure.

J. M. Walker, president of the Chicago, Burlington and Quincy Road, examined:

The CHAIRMAN. Mr. Walker, we are in pursuit of all information we can obtain on all sides in reference to this transportation question, and we have invited you among other gentlemen here to enlighten us in that regard.

Mr. WALKER. Well, sir, I do not know how much light I can give you upon that subject, but any information I can afford it will give me pleasure to do so.

The CHAIRMAN. Will you please give us the termini of your road?

Mr. WALKER. Do you speak of the road in Illinois, or our entire road?

The CHAIRMAN. Of the road under your control.

Mr. WALKER. One of the eastern termini is Chicago. Another is at Peoria. These are the two eastern termini of the line of road which we operate. The western termini are various. The farthest western termini is at Omaha. One is at Clinton, on the Mississippi River, and another is at Burlington, if you are pleased to call that a termini, and another at Quincy. We have then some branches leading off to other points in the State, and in the State of Iowa.

The CHAIRMAN. Do you remember the entire mileage of your road?

Mr. WALKER. It is about eight hundred and twenty-five miles in this State, and between thirteen and fourteen hundred miles in all, that is, the main track. The entire length of track, including side-tracks, I suppose is some sixteen hundred miles. I give it in round numbers, but could furnish a detailed statement from the records.

The CHAIRMAN. Have you ever made any estimates of the actual cost of transportation over your road, exclusive of dividends and interest on bonds, the actual outlay? I mean by cost, the cost of the running and maintenance of road and repairs of cars.

Mr. WALKER. That all appears in our annual report, sir. I did not bring one with me, but I can give you all those items. They vary, of course, from year to year. That question now I suppose means what are the net receipts.

The CHAIRMAN. No; what I meant was, what is the average cost per ton per mile?

Mr. WALKER. It was a cent and three-tenths last year.

The CHAIRMAN. That included all kinds of freights?

Mr. WALKER. Yes, sir.

Mr. DAVIS. That is, your working expense was one cent and three-tenths per mile run.

Mr. WALKER. Per ton per mile.

The CHAIRMAN. That includes everything except the payment of interest and dividends on the cost of the road?

Mr. WALKER. Yes, sir.

The CHAIRMAN. What was the working expense, the per cent. of your earning?

Mr. WALKER. Sixty-five per cent.; that is, about that. I can give it exactly if you wish it.

The CHAIRMAN. Do you remember the charges per ton per mile on your road?

Mr. WALKER. Those vary, sir. At my office I could give you the average. I had occasion to investigate that subject a few days ago. My attention was called to it, and I looked to see how the people of Illinois were taxed, in reference to transportation, as compared with other States and with European countries.

The CHAIRMAN. Have you the result of that examination?

Mr. WALKER. I have, sir; but I left it at my office. I can, however, state the result. It was that the produce of this country was carried cheaper by about one-third, or between a half and a third, than in England, Germany, or France; one-half cheaper than in the Southern

States, and cheaper than in the New England States. I shall be glad to furnish the figures to you, and have them in a form that I can do so.

About the same result is found to exist in reference to passenger transportation. The people of this State are riding cheaper than almost anywhere in the world. You will except from this two or three of the trunk roads. The New York Central charges 2 cents per mile, but that is partially made up, of course, by drawing-room cars and things of that sort. Taking that road and some of the trunk roads out, the statement I make to you is entirely correct. Yet, I think, if you take the two roads and compare them, taking the New York Central with its immense passenger traffic and compare it with the Illinois roads with its comparatively sparse population and light traffic, it will be found that we are carrying cheaper than they are, because, as you know, the cost of transportation has reference always to the amount, the magnitude of business.

The CHAIRMAN. You, of course, being engaged in the operation of railroads in this State are aware of the points complained of against railroad management; what do you understand them to be?

Mr. WALKER. Well, sir, it is summed up in what I have already stated. The complaint is extortion. That means if we charge any more than we ought we are doing a wrong upon the people. Now, whether that is true or not is a question of fact that has never been investigated in this State. I think very little attention has been paid by the railroad commissioners to that question. There are various ways of getting at whether that is true or not. I have stated to you one. The comparison I have made with European countries, where everything which enters into the maintenance, construction, and operation of a railroad is very much less than here. I presume, without accurate figures, that the cost was one-third less, nearly, than in this country, and yet, in view of that, we are absolutely carrying property and persons cheaper than they do there.

The CHAIRMAN. Do you mean you carry freight for less per ton per mile?

Mr. WALKER. Yes, sir; and passengers for less per ton per mile.

The CHAIRMAN. Without regard to distance?

Mr. WALKER. Without any qualification whatever.

Mr. NORWOOD. As you are on that line, I would ask you, do you mean by that to say that your net profit is one-third less than those other roads make?

Mr. WALKER. No, sir; I was speaking about the actual charges we make for moving persons and property.

Mr. NORWOOD. Without any reference to the gross or net receipts?

Mr. WALKER. I have made no reference to the net receipts in the statements I have made. I have only found out what they charge in England, Germany, and France, per ton per mile, and in the various States, and have compared what we charge with those figures.

The CHAIRMAN. Have you made any comparison with Belgium?

Mr. WALKER. No, sir; I do not think I instituted a comparison with that country.

Mr. NORWOOD. You included passenger transportation in your estimate?

Mr. WALKER. Yes, sir; I have investigated that subject and find about the same result as I have stated.

The CHAIRMAN. Have you in your investigations made any calculations as to percentage of net profits of railroads of this State? I mean in the percentage on their capital?

Mr. WALKER. I think there are about fifty railroad corporations in Illinois. I think there are only four which pay anything regularly to the stockholders—five sometimes. That is in short the history. I think that the net earnings of the railroads of Illinois for the last two years have been about from 2 to 2½ per cent.

The CHAIRMAN. On all the capital stock?

Mr. WALKER. On all the capital stock, yes, sir. There are only four which earn anything for the owners of property.

The CHAIRMAN. Do you remember what the net earnings of those roads are—the percentage on their capital, I mean?

Mr. WALKER. That is easily ascertained, sir. The dividends are generally 8 per cent. They speak for themselves. My own road, however, has paid 10.

The CHAIRMAN. What is your explanation of the discriminations which are complained of, if you have any?

Mr. WALKER. Well, sir, it would be a pretty bold statement to say that there were no grievances on the part of the people to complain of, so far as railroad management is concerned. I think there may be such, but, so far as this one question is concerned in Illinois, I think it is wholly without foundation. That is, that there is extortion in the sense that we are charging, or have hitherto charged, more than ought to have been charged under the circumstances, because railroads in the State have paid nothing. I take it for granted that they are as well and economically managed as others. So far as I can judge, aside from our own road, the men who are in charge of the railroads of this State are men of ability, distinguished and noted for their business capacity. I take it that they are managed with as much economy as they can be, and yet the result is that they are the poorest property in the West anywhere that I know of. When I say to you that there are only four roads in this State, out of the whole number of corporations, which pay anything to their stockholders regularly, you will understand what I mean; that is, that they pay very little as a whole to the owners.

The CHAIRMAN. Have you any connections or combinations with any of the roads East?

Mr. WALKER. No, sir; nothing beyond running arrangements.

The CHAIRMAN. I did not know but it was associated with some one of the leading roads.

Mr. WALKER. No, sir; I think the cry of extortion arises more from a want of information upon this subject than from any other cause. I think if the people of Illinois knew exactly how much the owners of those roads were receiving there would be no cry of extortion as a rule. There may be unjust discriminations possibly. That is, one locality under some circumstances may have been charged more than ought to have been charged under the circumstances, as compared with other localities. There may have been something of that kind. If there has been, that, under the recent action of the railroads of this State, has been entirely done away with. Since the enactment of the law last winter, the railroads, so far as they could, have conformed to the requirements of the law, and saved the property from utter destruction. They have attempted to prevent any cause of complaint from what they call unjust discrimination between places and persons, and the recent tariffs that were made were made with that view.

Mr. DAVIS. Have you changed your local tariff since that law?

Mr. WALKER. We have, sir, somewhat.

Mr. DAVIS. With a view of conforming to the law?

Mr. WALKER. With a view of attempting to avoid any complaints

that there should be or may have been. I have never heard any on our roads; but it was to avoid the possibility of any complaint being made that we have attempted so to adjust our tariff that there should be no unjust or unfair discrimination at different points on the road.

The CHAIRMAN. How do you regard these freight lines represented by the red, white, and blue lines; as an advantage or disadvantage?

Mr. WALKER. They are an advantage. The business of the country requires dispatch, and these freight lines tend in that direction. When I say this, I mean freight lines not owned by private individuals, for those are parasites that should not be tolerated, I think, in any railroad management; but I mean those freight lines that are made up and owned by the railroads themselves, which amounts to nothing more than arrangement between the railroads to join in forwarding freight.

The CHAIRMAN. Are freights carried any cheaper by those lines, starting at an interior point west of Chicago and going through to New York, than they are if they shipped to Chicago?

Mr. WALKER. Yes, sir; there is a saving of reshipment.

The CHAIRMAN. It costs in Illinois, then, or in Iowa, less the Chicago local charges?

Mr. WALKER. Yes, sir. I beg the committee to understand me. I do not believe in freight lines owned by private parties. I think that is unjust to the railroad, to the shipper, and to everybody else, because all the profits that come from these freight lines should go into the railroad treasury. No outside party should be allowed to make profits for this reason: If the railroads receive all the profits there is from transportation, then they can reduce their charges to that extent. And so far as the railroads with which we are connected, we have no private lines on our road beyond the American Express Company.

Q. Are there any of that kind in the West that you know of?

A. Yes, sir; I think there are. I presume there are.

Mr. DAVIS. I understood you to say that the charge was the same, less transfer here, whether they went by the through lines or whether they were local here and then shipped East from here. Is that the case?

Q. I don't know that I understand you.

A. For instance, a lot of grain of any kind is loaded anywhere on your line to be forwarded directly through to New York, or loaded on your lines, and comes here and is re-shipped into cars again. The only difference in the charge is the transfer charge. Did I understand you that?

A. So far as we are concerned the charge would be the same.

Q. Now let me understand that exactly, for I do not as yet.

A. I don't know that I fully understand your question, then, sir.

Q. A load, say, is loaded anywhere upon your line, and shipped here, and then reshipped for New York or any other point East. Now, I understand that you get the same rate as if it had been loaded in a through line and gone on to New York, or are your local charges greater than your through charges?

A. In the case you speak of there would be a charge from that point to Chicago. Then if there was a transfer, plus that transfer, and then the charge to the sea-board. If it is needed to transfer, the transfer must be paid, and the lines are combined to avoid that outlay.

Q. That is not the point. The point is, which costs the farmer or the shipper most?

A. It makes no difference whatever.

Q. Then do I understand you that your local charge is the same as

your through charge if it went on to New York? Your charge from some point out in the State to this point is the same per ton per mile as if it went through to New York?

A. As an illustration: There are two routes from Burlington to New York. The system has grown up that the through rate from Burlington to New York will be divided proportionately. If an article, however, wishes to come to Chicago and there take its chances by rail or water, there is a certain specific charge from Burlington to Chicago, which the road would collect.

Q. Which is the greater to you; which would be the greater charge?

A. The greater charge would be—there are two operations entirely. The proportion of a through charge is always less than a local charge from a competitive point, but only from competitive points, however. When you ask for any other local points there would be the same charge from that local point to Chicago in the one case as in the other. But at Burlington, coming into contact with an influence that cannot be controlled, whether by railroad or the Mississippi River, we have to meet that commercial condition. The shipper and everybody interested in the grain would be benefited by the through route to the extent that he can avoid transshipment and cost in that regard.

Q. It has been stated to the committee that in many cases the charge for one hundred miles, say, out on your lines, or two hundred miles, as the case may be, would be double in proportion to what it would be for through. In other words, the charge for local is much greater than that for through. Is that the case, or not?

A. Yes, sir; through freight going across the country from San Francisco to New York.

Q. No, no; from some point on your road.

A. Well, sir, we would charge less for a car-load of freight coming from Omaha per ton a mile than over one coming two hundred miles out, if that is your inquiry.

Q. Take two-way stations, if you choose, a hundred miles apart on your line, or take it here—the local charge there is double, perhaps, what your through charge would be where you have less competition?

A. That may be true, possibly. If you mean by through charge transportation from New York to points in Iowa or the West, it might be true. I don't know that it would, but it is possible that it might, because what we call through transportation is carried at a very small profit.

Q. Then I understand your local charges are much greater than your through charges?

A. Yes, sir; largely. I do not think they are double, but they are larger.

Mr. WINDOM. On what principle is that distinction made?

A. It is on the principle that we can afford to do it. If you carry one ton two hundred miles, you can carry it for much less than you can for fifty miles. The loading and unloading is avoided when it is through freight across your line.

Mr. WINDOM. I was going to ask you if there was any difference, except in the loading and unloading?

A. Yes, sir; you can keep your wheels running more, and that helps your road.

Mr. WINDOM. The loss of time by stoppages?

A. Yes, sir.

Mr. WINDOM. As an estimate, what are the lowest rates of cost that

freight can be carried for in this State, giving you all the business you could ask on a double-track railroad?

A. That is a pretty hard question; that would combine a great many elements.

Mr. WINDOM. What I want to get at is the minimum power of the roads to carry freight. The power to carry at the minimum price, I should say.

A. That is a very hard matter to answer. It would depend on the speed you would make, and the various other elements.

Mr. WINDOM. Well, I assume the most profitable rate of speed?

A. There are so many conditions that no mortal man in the world can answer it.

Mr. WINDOM. My reason for asking you is, that a double-track freight railroad has been agitated in this country between the Mississippi and New York. What, in your judgment, as a railroad man, is the lowest rate at which you could carry, paying simply cost, exclusive of dividends or stock? I do not include anything except the actual cost of transportation, maintenance of road, repairs of cars—everything that you include in the cost of transportation. Whether, in your judgment, in other words, it can be done materially cheaper than the cost which you gave a moment ago?

A. Not with the same speed, I think. I think it would cost more. I doubt whether it can be much cheaper at the same speed than it is now, and in the same mode we run our trains.

Mr. WINDOM. What, in your judgment, would be the speed of maximum profit for freight-trains?

A. About ten miles an hour.

Mr. WINDOM. The Pennsylvania Central Railroad report that the cost to them of moving a ton of freight per mile is eight mills and a fraction. Now, in your judgment, can a double-track freight-railroad, built for freight purposes alone, carry for materially less than that cost?

A. I doubt it.

Mr. WINDOM. A good deal of complaint is made that railroads made contracts with sleeping-car companies, &c., that are injurious to the roads, and for the benefit of certain persons in those companies. What is your judgment as to that?

A. Well, sir, I cannot tell about that, that is a pretty large question, but I have already nearly answered it. My own judgment is that if the thing is *de novo*—if the railroad can naturally and legitimately own it—it should be done. It was with that view that I said I thought no fast freight lines should be owned by private parties and put on roads. My own judgment is that express companies should be confined, if used at all, to the transportation of the most valuable packages. That, perhaps, would cover your question.

There was a question that I heard talked about in reference to the cost of transferring grain. It was stated to the committee that it was two cents a bushel. I think there is an error about that. Grain that comes and goes into the elevators here, and is transferred to the cars—transshipment, so called—they have usually charged three dollars a car, which would be something less than one cent. Grain that comes in by rail, and is transferred to Mr. Sargent's cars, or any other cars that go East, here through the elevators, it has been hitherto done for three dollars a car.

Mr. DAVIS. How many bushels in a car?

A. That brings it to something less than one cent. There are three

hundred and fifty bushels of wheat in a car on an average, and a larger number of lighter grain.

Mr. CONOVER. What is the cost per ton for grain from here to New York, through by rail?

A. That varies. The present rate is 45 cents a hundred.

Mr. CONOVER. A gentleman stated to me the other day, which I cannot believe altogether, that for the shipment of a car-load of cattle or lumber from here to New York, the cost was just one-half what a car-load of grain was. Can there be any truth in that?

Mr. SARGENT. Grain is going cheapest. It is the cheapest commodity that is carried.

Mr. DAVIS. The Chairman don't fully understand you, sir, about the transfer, and we both would be glad to have the details of that.

The WITNESS. I heard this statement made, that two cents a bushel was charged in all cases for the transfer of grain. That is an error, and the charge for transferring grain, where it comes in cars here, and is transferred to the elevator, and goes into cars to go East, is three dollars a car, or something less than one cent a bushel.

Mr. DAVIS. Is that general, or is it between lines that have communication with elevators?

A. It is a general charge, sir.

Mr. NORWOOD. That is the elevator charge?

A. Yes, sir.

Mr. WINDOM. That is simply for transferring?

A. Yes, sir.

Mr. NORWOOD. An average car-load, you say, is three hundred and fifty bushels?

A. Yes, sir, of wheat. An average car-load is ten tons; but as you get lighter grain, there is a greater number of bushels.

Mr. NORWOOD. You stated a while ago that there were four or five roads in this State that pay a dividend exceeding $2\frac{1}{2}$ per cent.

A. I beg pardon. I did not mean to say that the other roads pay $2\frac{1}{2}$ per cent. The other roads pay nothing. There are only four or five roads in this State that pay anything.

Mr. NORWOOD. How long has that condition of things existed?

A. From the commencement of the construction of railroads hitherto, sir.

Mr. NORWOOD. In this State?

A. Yes, sir.

Mr. NORWOOD. Have there been many roads, or many miles of road, constructed in the States since the war?

A. Yes, sir, a good many of them; exactly how many I cannot tell you, but I could furnish the information if it was desired.

Mr. NORWOOD. Taking these facts into consideration, what, in your opinion, is the reason for the construction of roads in your State not paying?

A. I think a great many roads have been constructed that ought not to have been constructed. In the first place roads have been constructed by land-grants in the West here generally. They have been induced to undertake the construction of roads which ought not to have been constructed, because they would get land-grants thereby. In this State a great many roads have been constructed under a pressure by all the people to have them, and for that purpose issuing county and town bonds, which is illegitimate, and ought never to have been tolerated.

Mr. NORWOOD. Have any roads been constructed in the State by land-grants since the war?

A. Not in this State.

Mr. NORWOOD. Do you know how many miles of railroad have been constructed in that State since the war?

A. No, sir; I cannot tell you definitely, but I could furnish the information if it was desired.

Mr. NORWOOD. In a general way, what number of miles of road in this State have been constructed in the last eight years?

A. Possibly one-sixth; maybe more. I should say perhaps more than that; perhaps one-fourth.

Mr. NORWOOD. What I don't understand is, that with this fact patent before the people, that these roads pay nothing financially, men will put their money in railroads and continue to build railroads.

A. That has been as much of an enigma to me, sir, as to you.

Mr. NORWOOD. I wanted your opinion on that subject; why, as a financial operation, men will bury their money in the ground when they know it is not going to yield anything?

A. Roads have been constructed in this State which ought not to have been constructed. There is no financially sound head that would ever put his money in. But I am sorry to say that enterprises which have had really no merit in them have been able to find a sale in the East, and abroad, especially, and the roads have been constructed and the bonds are worthless. For example, the Rockford and Rock Island road, two hundred miles long, in this State, never paid, I think, anything at all. It was constructed entirely on the bonds. A great many of the roads now owned by the main trunk-lines were constructed in that way. The farmers in the country would get together and say "We want a railroad"—for every farmer does want one at his own door. They would call a town meeting, agree to vote so many bonds—you would find men who would take those bonds—and make a mortgage on the road, and with this town and county aid in the shape of town and county bonds, and expending the result of that in grading roads, they would be enabled to negotiate the bonds in the East or Europe and get the money to go along with the enterprise, and then, when constructed, the other roads have been obliged to take them up. Very few of that class of roads have ever been put in operation by the parties who built them.

Mr. NORWOOD. You say these other roads pay about 8 per cent.?

A. From 8 to 10.

Mr. NORWOOD. What do they pay that percentage upon?

A. Upon their capital stock, I meant to state. Over and above their interest and operating expenses they have paid upon capital stock to the owners of the road from eight to ten per cent. dividends.

Mr. NORWOOD. Have any of these roads watered their stock, as it is generally called?

A. I don't know, sir, of any road in this State which has any watered stock in it. There may be some, but I think the rule will be found the other way; that the roads which are now in the ownership of the companies operating them have been obtained at far less than they cost, for a great many of them have been foreclosed and the capital stock wiped out once or twice.

Mr. NORWOOD. Does the capital stock, as you speak of it, stand now at what it was when the road was started?

A. O, no, sir. The capital stock has grown with the growth of the road. The construction account of the road is never closed as long as the company is being extended—as long as you can put on rolling-

stock—and the capital stock has been increased as the property has grown.

Mr. NORWOOD. Now, will you favor us with an itemized statement of what you include in the capital stock, when you say that your road, or any other road in Illinois, pays 8 per cent. on its capital stock?

A. I mean the moneys that have gone into the construction of the road, and which is represented by stock.

Mr. NORWOOD. Will you itemize that?

A. For example, a road is started a hundred miles long, if you please. It issues \$2,000,000 of capital stock. It completes the road, and it has expended this \$2,000,000. It has a road-bed and track down, but nothing to earn the money. Now, then, there are two ways to get it—one to borrow it by bonds, and the other to increase your capital stock. Both ways have been pursued by all the roads, perhaps, in this country. For example, they must have another million of dollars for rolling-stock. They say, "We will issue another million of stock," offering it first to the stockholders, and, if they do not take it, selling it in the market. That money is brought into the treasury, and is paid out for rolling-stock. But every addition of capital stock represents money.

Mr. NORWOOD. Now, then, you add that million of bonds to the capital stock?

A. Yes, sir.

Mr. NORWOOD. That makes three millions?

A. Yes, sir. I will repeat myself, as I see I did not make myself understood. When we have our track down we must have some rolling-stock, or the road is worthless. Now, there are two ways to get it—one to issue bonds or sell them in the market, the other to increase your capital stock and call in that. If we say we must have a million dollars, the company will issue another million of capital stock and sell it to the stockholders at par. If they don't take it, we will sell it in the market, and thus get the million dollars and get the rolling-stock and put it on. So, too, if you will extend your road another hundred miles, you have to increase your capital stock or else borrow the money on bonds and mortgage.

Mr. NORWOOD. Now, then, as I understand you, is that all that you include in your statement of the capital stock of the road?

A. Yes, sir.

Mr. NORWOOD. If it issues bonds, say a million, instead of issuing a million of stock, according to the illustration you have been giving, that would be three millions of stock.

A. If they issued bonds it would not be stock. If we had issued bonds instead of issuing the third million of stock, then our capital stock would have stood at two millions and our bonded debt at one million.

Mr. NORWOOD. I understand that. Then would you declare dividends on two millions, and not three millions?

A. Two millions; but you would pay your interest on your bonds.

Mr. NORWOOD. I understand that; but what I want to get at is what you call stock and what you declare dividends on.

A. Only upon stock.

Mr. NORWOOD. So the 8 per cent., then, in that case would only be upon two millions of stock?

A. Yes, sir, that is all.

Mr. WINDOM. And that is not declared until the interest is paid on the bonds?

A. No, sir. The operating expenses of the road are first paid, then

interest on the bonds, and then, if you have anything left, you distribute to the owners.

Mr. NORWOOD. I understand you to say that you do not know of any road in this State where there is watered stock?

A. I do not know of any. There may be some.

Mr. NORWOOD. Do you know where there have been any stock dividends?

A. Yes, sir. I think in many of the roads there have been stock dividends. In my own road there have been stock dividends in this way: For several years we omit to make any dividends. We take the surplus moneys of stockholders, instead of distributing them, and put them in the road and omit the dividends for one, two, or three years, and use all the earnings belonging to the stockholders in equipment and constructing the road—not in equipments, but in addition to the property. Then sometimes, at subsequent dates, we have represented that by the issuing of capital stock; in other words, paying stockholders money. Instead of giving it to them in money, we give it to them in stock. It is just what I repeated before, only in another form. Nothing beyond that, to my knowledge, has ever taken place in any road in this State. I don't say that there has never been anything of the sort; but I think I should have known it if it had been, for I have been here for twenty years.

Mr. WINDOM. Have these stock dividends exceeded the unpaid dividends to the stockholders or not?

A. No, sir. So far as my own road is concerned, there is a surplus; our reports will show the amount. I think about three millions not represented at all.

Mr. NORWOOD. Your report shows those facts?

A. Yes, sir; but the report would not perhaps show what I have stated to you about the distribution of stock where we have used the earnings. The report will show you the amount of our capital stock, and the amount of our debt, and the amount of our earnings, and everything in that regard. It may be of value to you.

Mr. DAVIS. I would like to ask one question which I presume your report don't show; they don't generally. I do it for the purpose of getting general information on the subject. That is, what is your average local rate for passengers and freight?

A. Our average rate is a little less than $3\frac{1}{2}$ cents per mile for passengers. That covers the whole road, branches and all.

Mr. DAVIS. That is passengers.

A. Yes, sir.

Mr. DAVIS. Now for freight.

A. Freight vary. I can hand you that. It will be in the report.

Mr. DAVIS. Couldn't you approximate? I should like those two items to go together.

A. I can send it to you exactly, but my recollection is that it is about $2\frac{1}{2}$ cents.

Mr. DAVIS. You have four classes?

A. Yes, sir.

Mr. DAVIS. Your first class may be one hundred and your lower class thirty; there may be that much difference?

A. Yes, sir; the rates local and through affect this question.

Mr. DAVIS. But I understood your answer to be this, that for each ton of freight that you transport over the road taking the entire road, both local and through, you got about 2 cents?

A. Yes, sir; I think it is about that. Rates have been going down.

My answer would not apply to any but one year. Rates have been reduced here ever since we commenced operating this road pretty nearly.

Mr. DAVIS. Your answer would be for the present year or last year, sir?

A. It will be for the eight months ending January, 1873. The close of the financial year was changed so that in the last report there was embraced only eight months. I could, perhaps, give you two years.

Mr. DAVIS. Do you pro rate that any water lines through?

A. No, sir.

Mr. DAVIS. Have you any connection with a line to Buffalo or elsewhere?

A. No, sir. Our road ends here and at Omaha.

Mr. DAVIS. I understood that, but I thought, perhaps, you had some connection with some of the transportation lines east of you by water?

A. No, sir; we have none.

Mr. WINDOM. Is the expense of doing business materially greater in the winter than in the summer?

A. Yes, sir; it is.

Mr. NORWOOD. Can you give an idea of the percentage of increased expenses in the winter over those of summer?

A. It would depend upon so many circumstances that you could not tell much about it. Sometimes we have snows that block the road for a week, and it becomes a very expensive affair. All these things enter into expense. As I said before, sometimes we make nothing beyond actual running expense in the winter months.

Mr. NORWOOD. You increase your rates in the winter to cover that increased expense, do you not?

A. No, sir; we make no difference.

Mr. NORWOOD. Are your winter and summer rates the same?

A. Yes, sir; they are the same—passenger and freight.

Mr. WINDOM. Is that the rule with the western roads generally?

A. I think it is, sir. There would be an exception to that. Those roads which are in competition with the Mississippi River, I think, would make a change, and I think the Rock Island road does. That is in competition with the Illinois and Michigan Canal. I cannot say how that is, but that is my impression.

Mr. WINDOM. The others you think don't?

A. No, sir.

It is suggested whether I should call the attention of your committee to the fact that the present law, if we were to be governed by it, would require us to do business on our branch roads the same as it is done on the main line—at the same rates. It does of course require that, but I don't know that that is material to the inquiry that you have before you.

There is one inquiry, I suppose, that is quite pertinent to your investigation, and that is that we are blocked here in our business. Outlets from Chicago to the East should be greatly enlarged in some form and in some way. We are limited in our business in a winter season very much. We hardly do half the business that we ought to do and could do.

Q. Why are they blocked?

A. Because we cannot transfer to other roads that which we can and do bring in. I think we brought into this city last year—I think we transferred to the eastern roads, leading out of this city, about six millions of bushels of grain. We ought to have given them twelve millions, and would if they would have taken it.

Mr. DAVIS. Then, I understood that the facilities West for bringing in are greater than the facilities for going East?

A. Yes, sir; very much greater.

Mr. DAVIS. That is confined to the winter months, is it?

A. No, sir; it is all the year. Our rolling-stock is, perhaps, no more than that of other roads. Our road is not equipped with stock more than is sufficient to do business, hardly enough; but the fact is, we have not been doing as much as we ought to do into at least one-fourth any time this year, and do not to-day.

Mr. DAVIS. Is that for want of facilities?

A. Yes, sir; for want of facilities for shipping East. There is a lack of transportation on the lakes and a lack of railroad transportation. I think I am not very much exaggerating if I should say that the business is limited at least one-third, from that single fact, at Chicago.

Mr. DAVIS. If that is the case now, is it increased during the closing of the canals?

A. It increases when the lake navigation ceases.

Mr. DAVIS. I say canals.

A. O, yes, sir, from that cause also.

Mr. DAVIS. How many months during the year is that closing of navigation with you, ordinarily?

A. It is from December to May; very often till the middle of May.

Mr. DAVIS. Including those months?

A. Sometimes you run up into, perhaps, the 10th of December. All insurance expires on the 30th of November, but you may sail after that. Sometimes the lakes close before that, and sometimes after; but, as a rule, you would include December always.

Mr. DAVIS. Five months?

A. Yes, sir.

Now, I have a little statement here of the grain that was brought from Chicago, to show you how things run a little, if it would be of any use to you. There were received into Chicago last year 81,000,000 bushels of grain. There were shipped by all routes, 77,000,000 bushels. That left 4,000,000 to be consumed in Chicago. This grain was brought in by different routes; our road bringing in eighteen millions; the North Western, seventeen; Illinois Central, fifteen; Rock Island, twelve, &c., and by canal, eight. Seventeen millions went out by rail during the winter mostly. The Michigan Central took between six and seven millions; the Michigan Southern, four and a half millions; Pittsburgh & Fort Wayne, three millions and a half.

Mr. NORWOOD. What proportion of that weight came across the Mississippi by your line?

A. I have not the figures before me; it requires some little time to get at that. I could procure it. It would require probably a week or so to get the information.

Mr. NORWOOD. I merely asked you as a matter of information. I wanted to know what the trade was across the Mississippi.

A. The large quantity is from Illinois. From Iowa more comes in. hogs and cattle.

Mr. WINDOM. What, in your judgment, would be the relief afforded by an improvement of the Mississippi River?

A. It would be of very little consequence, in my judgment.

Mr. NORWOOD. At what point do you mean?

A. Hardly at any point. The commerce is from the West to the East, and the East to the West, so far as this section is concerned here. Our

road reaches the Mississippi at four points. The business upon the river is so slight that we do not regard it as a competition hardly.

Mr. WINDOM. Do you make any modification of your charges by reason of the crossing of the Mississippi?

A. No, sir.

Mr. WINDOM. What I mean by that is, do you charge as much for grain from your western terminus at Omaha to the Mississippi, as you would for bringing it fifty or a hundred miles this side of the Mississippi?

A. The local rates are about uniform over the road. We should bring produce from Omaha at less price than any from intermediate points.

Mr. WINDOM. The fact of crossing the Mississippi, then, does not cause any modification at all of your prices?

A. No, sir.

Mr. NORWOOD. Is not the want of competition by the Mississippi owing to the fact that the mouth of the river is not in condition to get out?

A. That is possible. If you could have facilities at the mouth of the river, so that ocean navigation could be reached with facility and create a market there, then the improvement of the Mississippi River might be of value. The tide of commerce might possibly be changed, though I should hardly expect it. Every thing tends toward the great money centers. It would not reach New York City in that direction. It would reach European markets, possibly, in that way, but I don't think the produce of the Northwest would ever go down the Mississippi and then get to New York or Boston.

Mr. WINDOM. What are the objections to its going to Europe in that way?

A. I don't know that there are any, except that there is a lack of facilities now. It has been claimed that corn could not pass through that point.

Mr. WINDOM. You have never investigated that subject particularly, I suppose?

A. No, sir.

Homer E. Sargent, general superintendent of Michigan Central road at Chicago, examined.

Mr. WINDOM. Will you please state your relation to the railroad with which you are connected?

Mr. SARGENT. I am general superintendent of the Michigan Central Railroad.

Mr. WINDOM. The termini of that road are where?

Mr. SARGENT. Of the main line, Chicago and Detroit.

Mr. WINDOM. What connecting lines have you?

Mr. SARGENT. We have a short cut from Niles to Jackson, which we call our line division, of one hundred miles. We have a road running north to within sixty-five miles of the straits, which is two hundred and forty miles long; a road running from Jackson to Grand Rapids ninety-four miles long. We have a road from Kalamazoo to South Haven, directly west of the lake, of forty miles; we have a road running from between Lake Station, which is the southern point of the lake, directly west to Joliet, cutting the Chicago and Rock Island and the Chicago, Alton and Saint Louis, which is forty-five miles. We have a short road running from Niles south to South Bend of thirteen miles; making eight hundred and sixteen miles altogether.

Mr. DAVIS. What is your connecting road from the East?

Mr. SARGENT. Chiefly the Great Western, running directly to Suspension Bridge. We connect also with the Grand Trunk to Montreal, and with its connections to Northern New England points, and we now connect with the new Canada Southern, which is just completed to Detroit.

Mr. DAVIS. Have you any other than running connections with what is called the Vanderbilt system of roads?

Mr. SARGENT. No, sir, except an interchange of business under agreements to pro-rate the long business.

Mr. DAVIS. What freight lines, independent or co-operative, are operated on your road?

Mr. SARGENT. We have the Blue Line, which runs directly through over the Great Western, the New York Central and connections, which is our principal and co-operative freight line that was established in January 1, 1867, on the completion of a third rail across the Great Western, making a uniform gauge—the first uniform gauge we had—used from Detroit East.

Mr. DAVIS. Are there any independent or non-co-operative lines on your road?

Mr. SARGENT. We have what we call the Erie and North Shore line running over the Great Western and connecting with the Erie road, which is co-operative and owned entirely by the companies. We have a connection with the Grand Trunk; with the line called the International line, which is a co-operative line owned by the roads running in connection between the Michigan Central, across what used to be the old Buffalo and Lake Huron road, and now controlled by the Grand Trunk from Sarnia to Buffalo; and we have what is called the National Despatch line, which is a grand trunk connection in connection with the Vermont Central system of roads, a co-operative concern, running over our road.

Those, as I remember, are the only co-operative freight lines. We have had for a good many years the Merchants' Despatch, which is a freight organization of the American Express Company, running over our road. That we have paid a percentage on their getting the business, and two years ago they put in, by an arrangement with Mr. Vanderbilt, or of his chiefly, some cars that they called the Merchants' Despatch cars. They were partially owned by the American Express Company, perhaps a stock company, which, however, no officer of the Michigan Central has ever had any interest in. Those cars are run on the same mileage as we pay in our exchange—our transfer of cars owned by the roads.

Mr. DAVIS. What is that?

Mr. SARGENT. A cent and a half a mile.

Mr. DAVIS. Who keeps the cars in repair?

Mr. SARGENT. The owners of the cars keep them in repair.

Mr. WINDOM. What do you estimate the cost per train a mile of running your trains?

Mr. SARGENT. Well, sir, I could not tell you here. We have figured it a great many times, but I have not got it in mind as to the exact or approximate cost even.

Mr. WINDOM. Have you the figures as to the cost per ton per mile?

Mr. SARGENT. Pretty nearly. Our report gives it exactly, and if I should make a report I might do it a little at random. But I can give it pretty nearly. Our through freight for the year ending the 31st of

May yielded us altogether one and thirty-six hundredth cents per ton per mile, I think.

Mr. WINDOM. That was the receipts?

Mr. SARGENT. Yes, sir; that was the receipts. Our local freight, as I recollect it, was about $2\frac{1}{2}$ cents per ton per mile.

Mr. WINDOM. Do you remember the cost of moving?

Mr. SARGENT. Our report contains that, and I can figure it from that, but I could not tell you exactly. I suppose our cost of moving all freight altogether was something like a cent and a third per ton per mile.

Mr. WINDOM. So that there was very little profit on the through freight?

Mr. SARGENT. Yes, sir.

Mr. WINDOM. By cost you mean everything, exclusive of dividends and interest on bonds?

Mr. SARGENT. Yes, sir.

Mr. DAVIS. What were your working expenses?

Mr. SARGENT. Last year it was about 68 per cent. of the gross earnings.

Mr. NORWOOD. Yours is a double-track road?

Mr. SARGENT. We are beginning to double-track now as fast as we can. We have now really all but eighty-two miles of the two hundred and eighty-four double-track, utilizing this air-line. We run our through freight east over that line, and west over the old line.

Mr. NORWOOD. What, in your judgment, is the most economical speed to the company for a freight train?

Mr. SARGENT. Including stoppages they should not run over about ten miles an hour for the most economical rate of speed.

Mr. WINDOM. In your judgment could the movements of freight be materially reduced in price by a double-track freight railroad used exclusively for that purpose?

Mr. SARGENT. It may be somewhat reduced, of course. Very much, however, I think would depend upon the engineering of the road and the grades. Taking the present three lines, the grades of the Pennsylvania line, some portions of them are very heavy. They have a double track from Pittsburgh east—the Pennsylvania road itself. There are some heavy grades in Ohio, on the Pennsylvania Central—its western connection. Out of this State, and through the State of Indiana, their grades are pretty easy. The Lake Shore and Michigan Southern grades vary from here to Buffalo. There they connect both with the New York Central and the Erie, and the Erie grades are quite heavy in many places. The New York Central, as you know, are pretty uniform. With us, in our improvements for the last two years, we have been reducing our grades wherever we were double-tracking and could do so, particularly over specified divisions where an engine ran its round trip. The Great Western grades are going to be easy; there we connect with the New York Central. Now, in an independent freight-carrying road, very much will depend upon the manner in which they could engineer their road to make easy grades. Then, perhaps, they could carry a little cheaper than the present rates. I suppose, however, by the time a double-track road could be built, the present three trunk lines through to the East will all be double-tracked with steel rails. They are pretty nearly now. They would undoubtedly compete and carry freight at the same prices. They certainly would have to if they carried it at all. I think by the time that such a road was built transportation demands

would be such as to fill them all, perhaps nearly as full as they are now.

Mr. NORWOOD. What, in your judgment, is the lowest sum for which such a road could carry freight, exclusive of interest or dividends; the actual cost of the road?

Mr. DAVIS. With such a grade as there necessarily would be between it and here, for instance.

Mr. SARGENT. I will give a statement, but I want to preface it by stating that there are so many conditions by which it would be liable to vary that it is very difficult for anybody who might claim to be an expert to state exactly what it would be. Now, for instance, very much would depend upon the amount of tonnage they could bring back. If they have got to run 75 per cent. of their stock, or 50 per cent. of it, back, as we run now more than 50 per cent. of our stock back light, that makes a difference of 25 or 20 per cent., perhaps, in their cost of carrying.

Mr. WINDOM. It would be safe to assume that that state of things would continue?

Mr. SARGENT. Yes, sir; of course freight goes east and the manufactured product goes west, and, if the road runs through a mining or iron country, as the Pittsburgh, Fort Wayne and Chicago and the Pennsylvania Central do, they could load their cars part of the way back. They *do*, and they can carry freight a little cheaper than we, perhaps, and roads farther north. But I suppose a road, say built with steel rails, running its trains not exceeding ten miles an hour, might carry its freight with 50 per cent. of its stock running back light, at something less than a cent per ton per mile.

Mr. WINDOM. Actual cost?

Mr. SARGENT. Yes, sir. There are periods, in the competition and the disagreements and the misunderstandings between the competing lines, that we bring freight west now for short times at two-thirds of a cent a ton per mile. The lines east have been bringing first-class goods between New York and Boston, Philadelphia and Chicago, for two months past, at about forty cents per hundred. Forty-two and a half cents per hundred by our line would be a cent a ton a mile. They have been bringing groceries and the fourth-class goods at about 25 to 30 cents; that is about two-thirds of a cent per ton per mile.

Mr. WINDOM. You don't understand that to be a paying rate?

Mr. SARGENT. No, sir.

Mr. WINDOM. Not paying expenses even?

Mr. SARGENT. No, sir. Still, perhaps, it is better to put the goods into those cars. Perhaps we are better with two-thirds or three-fourths of a cent a ton a mile than to run the cars back empty. At any rate, where we have regular customers, we feel that we had better take their goods than to throw them over to some other line. The through lines, however, are every year now reducing their cost of transportation to the shippers of both east and west bound freight. I had occasion, in making up our report this year, to make up a statement for our president, by which it was shown that all the local business of the Michigan Central Railroad proper, in the last five years, had fallen 34 per cent. I commenced in 1868, when I supposed everything had got regulated, and, taking the rates year by year, I found we had gradually fallen every year between our local business in the five years 34 per cent.

Mr. DAVIS. Have you connections with water-lines between here and the East? Do you pro-rate with any of them?

Mr. SARGENT. We have connection with a water-line or two at De-

troit that run in connection with the canal lines from Buffalo, but that is used altogether. I will correct myself by saying that years ago we did considerable business from here in connection with such lines, but since we are running through cars without breaking bulk we do no business from Chicago now or from the west end of our roads in connection with the water-lines, but we do some business, local, from Michigan that comes to this water-line, run through by steamer to Buffalo and thence by canal.

Mr. DAVIS. Do you make the rate when that is the case through to Buffalo?

Mr. SARGENT. No, sir; they give us a rate of 5 cents per hundred pounds on grain, 10 cents a barrel of flour, less than what the through rates may be from Detroit to the sea-board, and we give that information to our shippers and leave it optional with them to send by whichever way they see fit.

Mr. DAVIS. Who gives you the 5 cents?

Mr. SARGENT. The agents of the steamer lines at Detroit.

Mr. DAVIS. Suppose a shipment was to go from here to Buffalo under that rule, what proportion would belong to you and what proportion to the boat?

Mr. SARGENT. We get the same proportion as on the shipments going by all rail; there is no difference or discrimination.

Mr. DAVIS. But I want to know what that is.

Mr. SARGENT. If it was all a rail shipment we would get 55 per cent. Supposing it was a dollar a barrel on flour we would get 55 cents and our rail connection would get 45. If it was to go by water we would get 55 and the water connections would get 35.

Mr. DAVIS. How many miles would you haul it, and how many miles would they haul it?

Mr. SARGENT. We should haul it two hundred and eighty-four, and the boat would haul it about two hundred and thirty miles. That is based on a *pro rata* on the all rail, and then they take a barrel of flour at 10 cents less than our connecting road does all rail.

Mr. WINDOM. What is the difference in distance from Detroit to Buffalo by water and rail?

Mr. SARGENT. It is about the same.

Mr. DAVIS. You formerly had a connection that you shipped freight from here to Buffalo by boat and rail combined?

Mr. SARGENT. Yes, sir.

Mr. DAVIS. What is the proportion that each get by rail and water?

Mr. SARGENT. The arrangement has always been the same as I named. Years ago, before we had a through rail connection, that is to say, where there was no unbroken gauge, before we had an unbroken gauge, the proportions were made in the same way they are made now. That would give a 10-cent less rate on flour from Detroit east than the proportion of the rail connection from Detroit east, and the reason this has changed somewhat is mainly this, that before we had the unbroken gauge we had to transfer at Detroit. There was a delay there and liability, perhaps, to some damage, breaking, or something of that kind. The transfer again at Suspension Bridge was a delay. We transferred again at Albany. There was a delay there. But now, since we have unbroken gauge and are running the flour through in cars without breaking bulk or transfer, the time is so much quicker, and the condition that the property arrives in is so much better, that people avail themselves of the all-rail route.

Question. The object of my inquiry is this—to know what the differ-

ence is in the usual cost between water and rail lines. Where they pro-rate, what is the difference between them? And perhaps you know from here by water to Buffalo.

Answer. I could not tell you. Water rates vary according to the vessels which may be in port. They are running under no fixed rule. I cannot answer your question by this statement, but I am giving you some information to the best of my ability. Our rail rates during the summer and during the competition by water are necessarily very low. We have to make them low. But the vessels come in here, and if there happens to be a fleet of them here, and the demand for transportation is not very pressing, and they cannot get such rates as they desire, they take at any rate they can, and they vary, between maximum and minimum, from 5 cents a bushel to 15 cents a bushel. They have received as high as 16 cents, and carried as high as 5 cents per bushel. Therefore from the practice I cannot tell the difference. That is, I cannot state to you the difference, but I should suppose, taking the average of the rates between the rail and water through on grain or flour between Chicago and the sea-board, there is a difference of from 20 to 25 per cent. less on the water rates than there are on all-rail rates. I should think that would be, perhaps, about the average of it.

The CHAIRMAN. Who fixes the rate of freight between here and New York?

A. The managers of the Western road; that is, the managers of the road leaving Chicago for the East fix the rates of east-bound freight, and the managers of the roads leading from the sea-board to the West fix the rate on the west-bound freight by agreement.

Q. Do they meet and agree upon certain prices?

A. The western men generally meet together and agree on the prices East. The Pittsburgh, Fort Wayne and Chicago, the Lake Shore and Michigan Southern, and our own meet; and the managers of the eastern roads meet together at New York generally and arrange matters. Sometimes they all meet together, if they think it is desirable.

Q. On what principle do they fix those rates?

A. The rates from here east-bound are fixed somewhat according to the demand for transportation.

Q. The usual rule of demand and supply fixes them?

A. Yes, sir.

Mr. DAVIS. Who selects the parties who fix the rates—how are they selected?

A. The general freight-agents of the roads usually meet together and fix those rates; sometimes, and generally, consulting with the higher managers—the superintendent or president of the road.

Q. Are your rates changed sometimes twice a week?

A. Well, no, sir; not as often as that.

Q. But the general freight-agents do not meet every time a change is made, do they?

A. Yes, sir; usually. They meet or they communicate by wire or letter. They do not change unless the agreement is made mutually to do so. I am speaking of the lines from here east.

Q. The trunk lines?

A. Yes, sir.

Q. Which are they?

A. The Pennsylvania line, running through from Philadelphia or New York to Chicago; the Lake Shore and Michigan Southern Railway, running in connection with the Erie and the New York Central;

the Michigan Central, running in connection with both of these roads and with the Grank Trunk.

The CHAIRMAN. Is the Baltimore and Ohio in this connection?

A. Yes, sir.

Q. Any road reducing the fare without consultation with the agent would be considered as cutting?

A. Yes, sir.

Q. And that would lead to a contest that would be fought out until they met together again and agreed?

A. Yes, that is the way. The general freight-agent of the western roads of the trunk line, the general freight-agent of the Michigan Central, Lake Shore and Michigan Southern and Pittsburgh Railroad, west to Chicago.

Q. Where do the general freight-agents reside?

A. The general freight-agent of the Michigan Central Road resides at Chicago, of the Michigan Southern at Cleveland, but his chief assistant, to whom he gives the power to make these rates, resides at Chicago; the general freight-agent of the Pennsylvania line I think resides at Pittsburgh, and he is consulted when these changes of rates are made. He is sometimes here himself, but sometimes he is consulted by wire.

Mr. DAVIS. Then really there are but three parties consulted; I do not understand you to include the Baltimore and Ohio in this.

A. Well, sir, I am not certain whether they are always present at the meetings or not, but they adopt the same prices that the other roads make. The Baltimore and Ohio road is not much of a competitor for the New York business; it has never been so here.

Q. The gentlemen, if I understand, who fix these rates are the general freight-agents of the respective trunk lines going east?

A. Yes, sir.

Q. Are the Boston lines consulted in the fixing of your rates?

A. Not on the east-bound. It is mutually agreed between the roads that the western roads may make the east-bound rates, and the eastern roads shall make the west-bound rates.

Q. But I understand you that that is regulated more by the amount of freight transferred and what they think they can get?

A. Yes, sir; the law of supply and demand, of course, has something to do with that; it is the motive chiefly that actuates in these cases; but it is only just to the line to say this, that last winter our maximum price to New York was 65 cents. It was 39 cents on a bushel of wheat or a bushel of corn, and our rate to Boston was 70 cents; that gave 42 cents on a bushel of wheat or a bushel of corn. If the rates had been higher the demand would have carried a great deal of property over our roads, but we would not make it any higher. It is only just also to the eastern roads that are competing with water between here and New York to say that we have to keep up a very large car equipment to do this business five months in the year, while seven months in the year our cars are lying idle, or we have to do this business at cost or less, if we do it at all. Now, the position of the western roads is precisely the opposite of ours. During the season of navigation they have, in the main—they have had years before—perhaps the business now is increased to some extent, as Mr. Walker said, beyond their car-capacity for carrying it; but they have had heretofore the rail and the water to carry for seven months in the year, and they could keep their equipment busy seven months in the year. The remaining five months they were dependent on the seven to carry, and their business always was limited. But still, they always got good rates during that five months.

Our case is the reverse of that. We carry seven months very low, if we carry at all, as against water; and during the five months we carry at less per ton per mile than any of these western roads have heretofore, until within a year or two, brought into Chicago.

Q. What is the cause of your carrying low seven months?

A. Water competition.

Q. Then it is water competition that regulates the charge for seven months?

A. Yes, sir; during six or seven months in the year.

Q. And that is generally lower than the winter rates, of course?

A. O, very much, sir.

Q. What per cent.?

A. It is a third less in the summer than in the winter.

Q. That is to say, if you charge 66 cents in the summer you would charge a dollar in the winter, on the average?

A. Yes, sir. Last week vessels were asking 13 cents a bushel for corn to Buffalo. This week they are offering to carry it for 8; that was two or three days ago.

Q. That is accounted for, however, from other causes?

A. Yes; they would have got higher prices now, towards the approach of the close of navigation, than they did during the summer. The rates of insurance have advanced also.

Mr. J. M. WALKER, president of Chicago, Burlington and Quincy Railroad, here appeared and stated in addition to his former remarks:

Mr. CHAIRMAN: I may have been misunderstood with reference to what I said about the Mississippi River and the improvement of that. I meant to say that so far as the section of country into which our road runs, that the improvement of the Mississippi River would not be of much competition. I did not mean to say anything about what would be the effect, for example, on the business of the Illinois Central road, or the lower part of the river. Something was said by the commission when I was present here, in reference to the tariff which they have framed under the recent legislation for the railroads of Illinois, and I understood the commission to say to the committee here they were of the impression that that would furnish a reasonable remuneration to the railroads if they should adopt it. I have given that matter some thought. We have taken the business of our road for the month of July, and placed it under that tariff, and the result would have been that we should make no profit. And the result will be to all the railroads in Illinois, if they do business under that tariff framed by the commissioners; the railroad property from that time out is rendered worthless, absolutely and certainly.

By the CHAIRMAN:

Q. Have they materially reduced the rates that were charged before?

A. Yes, sir; taken as a whole, they have reduced it probably more than a quarter.

By Mr. DAVIS:

Q. I understand you that it is your opinion that if the railroads work on the tariff made by the commission they will do it at a loss?

A. They would do it at a loss. I think it would at once render the whole railroad property of the State valueless; they could make no profit.

By the CHAIRMAN :

Q. I find that on your road, for instance, for a hundred miles, they fix a maximum of fourth-class freight at 18½ cents per hundred. That, on a ton, would be \$2.70 for a hundred miles, or 3 cents and 7 mills per ton per mile?

A. Yes, sir.

Q. It occurred to me that they were liberal; why would it be a loss to the road?

A. Stock, grain, and lumber form nine-tenths of the business of our road.

Q. Is that what you call fourth-class freight?

A. The commissioners, in some cases, have allowed us as much as our own charges are under our own tariff; in others it is a great deal less. But taking the whole tariff together and apply it to our road, and it is simply disastrous. And what is true of our road would be true of every other road in the State.

Receipts and shipments of grain, 1872.

	Bushels.
Received in Chicago.....	81, 571, 755
Shipped into Chicago by all roads.....	77, 238, 522
Leaving for consumption in the city.....	4, 333, 233

This grain was brought in as follows :

	Bushels.
By Chicago, Burlington and Quincy Railroad.....	18, 021, 585
By Chicago and Northwestern.....	17, 239, 143
By Illinois Central.....	15, 751, 786
By Chicago, Rock Island and Pacific.....	12, 521, 663
By Chicago and Alton.....	7, 416, 885
By Chicago, Danville and Vincennes Railroad.....	2, 191, 420
By canal.....	8, 017, 865
By other sources.....	411, 426
Shipped out by lake.....	59, 354, 222
Shipped out by rail:	
By Michigan Central Railroad.....	6, 432, 832
By Michigan Southern.....	4, 683, 587
By Pittsburgh, Fort Wayne and Chicago.	3, 640, 328
By Pittsburgh, Cincinnati and Saint Louis Railroad.....	1, 818, 298
By all other sources.....	1, 309, 255
	17, 884, 300

Mr. H. D. COOK, of the railroad and warehouse commissioners, recalled at his own request :

Mr. COOK. Mr. Chairman, another source of complaint on the part of shippers consists in this: that the rates are not only lower at competing points than they are from intermediate points of less distance, but just as long as they can load their cars at competing points, shippers between competing points can get no cars. The result is that they are compelled to hold their grain until the supply for shipment at competing points is

exhausted, or the price of grain goes down so that they decline to ship, before they can get cars. Then they can be furnished with cars, but have to pay an additional rate and accept a lower price for their products.

Another is that at stations between competing points the companies refuse to furnish through cars. I will make a statement of one road which will illustrate the matter. I will take the Toledo, Peoria and Wabash road. Shippers east from Peoria on the line of that road, at El Paso and out as far as Chatsworth, from thirty to sixty miles east of Peoria, the company refuse to furnish at those points through cars; and the rates, when they will furnish them, are much higher from El Paso than from Peoria—El Paso being thirty miles east, in the same direction that the freight wants to go. But they compel these parties to load their cars, send them into Peoria on local rates, and then the cars are rebilled there and come right back over the same road and go on east. The shipper is therefore compelled to pay local rates into Peoria—pay a cent a bushel transfer when the grain in the cars is not moved at all—shippers of his grain there prohibiting him from making contracts with eastern parties, and then possibly the very next day these same cars, with the same identical grain, will be sent right back past this station, going east.

I name this, because I am perfectly cognizant of the facts stated.

Another thing: It is very difficult for us to obtain from shippers the facts in the case, because they say that if the railroad companies know that they are giving this information, they will give them no cars at all.

The CHAIRMAN. Mr. Utley desires to make a brief statement. (To Mr. Utley.) Proceed at once, if you please.

Mr. UTLEY. It is in answer to the question propounded by Mr. Windom last evening that I wish to say a few words. The cost of transportation upon the river after the completion of the improvement will not be over six mills per ton per mile, including State tolls—reasonable tolls on the locks.

By Mr. DAVIS:

Q. What river do you speak of?

A. The Illinois River. I will make a little explanation. The statement I made of the cost on the canal, of a cent and seventy-five-hundredths being the cost of transportation—I meant by that as taking corn for a basis. There are many articles—coals, for instance—where the tolls are small, nominal, and the cost of transportation, I presume, is not more than one cent and a quarter per ton per mile. The business of the Illinois River, which we expect to come when it is once improved, will be largely increased, aside from the products of the country. It is demonstrated pretty clearly that to make cheap iron and cheap steel in this State it requires a union of the iron ores from Lake Superior and the iron ores from Missouri in the proportion of about 45 and 55 per cent. It takes a ton and three-fourths of these ores to make a ton of iron, and two and three-fourths tons of coal. Coal is very abundant on the banks of the river, and consequently they must fetch the ores to the coal. There is one establishment erected at Joliet that is second to but one on the continent.

By the CHAIRMAN:

Q. Do you mean to make pig-iron?

A. Manufactured iron, rails, and steel. This establishment is ready to use 10,000 tons a year for the first year, and increase very largely

with iron ores from Lake Superior and Missouri the moment they can get up the river; but there is no way, and they cannot get up. They have already erected their furnaces, and are using about 400 tons of coal a day now, doing an immense business with iron and steel rails. They have erected their blasting-furnaces to use these ores as soon as they could get the ore up the river.

The amount of zinc that is made at La Salle is larger than at any other town in the world, I am told. There are five or six furnaces there. Their ore is brought from the North to the coal in Illinois River valley. I thought perhaps that the cost of transportation was a little important.

Through this lock at Henry, and the ones that we propose to build down the river, and are building, we can pass twelve canal-boats at once in 13 minutes. The dimensions of the lock are these: 350 feet long between the lock-gates, and 75 feet wide.

When I said to-day the largest lock in the world—there are two or three building that are some wider, but none any longer. It was built at a larger cost, to make it correspond with the ideas of the United States engineers, with whom, I am glad to say, we have a perfect understanding, and a pleasant one also.

The charges by the Rock Island road from Henry, on corn, to Chicago were 11 cents per hundred pounds previous to the 1st of July last. At that point they were in competition with the river. From the town of Tiskilwa, about the same distance from Chicago, it was 15 cents a hundred, that part of the line not being in competition with the river.

Q. The canal and railroad being in competition at Henry, and there being no competition at Tiskilwa?

A. That is it, sir. Now, their charges at the same time from La Salle, a hundred miles from Chicago, are 9 cents a hundred pounds on corn. Their charges from Chillicothe, which is one hundred and forty miles from Chicago, are also 11 cents a hundred pounds on corn. There they were in competition with the river again.

Q. What river?

A. The Illinois River; it is down below Henry.

C. M. Gray, assistant general freight agent Lake Shore and Michigan Southern Railroad, examined.

By the CHAIRMAN:

Question. Will you please state your official position in connection with the railroad?

Answer. Assistant general freight agent of the Lake Shore and Michigan Southern road.

Q. Who are the gentlemen in this city who, with you, establish freights eastward?

A. The general freight agent of the Michigan Central and the assistant general freight agent of the Fort Wayne road act in concert with me in establishing the east-bound rates.

Q. How long have you been engaged in that business?

A. About nineteen years.

Q. How are these freights fixed; upon what principle, and in what manner as to agreement with other parties; do you meet together as agents and fix the freights, or how is that?

A. Yes, sir; we have no organization at all. It is simply a courtesy notice that it is proper to consult with reference to advance or reduction of rates; we meet together, and if we deem it proper to advance, we do so, and the same is usual in the way of reduction. We are gov-

erned by the quantity moving and the price of freights by lake. The lake craft take the lead in reducing the rates, and they also have a very decided influence in the advance of rates when it comes towards winter. If they are carrying very high, so that it comes near to the railways, we immediately advance a little and keep a little above them all the time.

Q. The principle on which you fix your rates, then, as I understand you, is the demand and supply of freights to be moved, and the rates on the lake?

A. Yes, sir.

Q. And after you make the agreement as to rates as you have spoken of, the companies are in honor bound to adhere to them, I suppose?

A. O, yes; we publish a tariff in printed forms.

Q. State, if you please, how the cutting occurs. Sometimes, you know, we have what they call "blood-letting" by the roads, and they "cut under." How does that arise?

A. It arises most invariably with men who have little influence and want judgment. There is nothing gained by it.

Q. The cause of it is, from some person undertaking to carry below your rates?

A. Yes, sir; some persons think that they can secure a large quantity of freight by making a private rate less than the published rate. That soon shows, however, and if there is a scarcity of freight it forces all the other lines down. They drop down, sometimes without any concerted action whatever. That is very apt to be the case on the decline of freights from the winter to the summer rates in the spring of the year. They drop without consulting one another.

Q. Is the Baltimore and Ohio included in this consultation?

A. No, sir; all of their freights are carried over our lines, and they are subject to our rates.

Q. Have you any running connection with any lines on the lake?

A. No, sir; none whatever. In former years we used to run a great deal of freight to Toledo and ship from there by lake.

Q. To where? To Buffalo?

A. To Buffalo. We used to make a through rate; it was called the "Lake and Rail rates" at those times.

Q. Do you remember what the *pro rata* was between the railroad company and the lakes at that time?

A. Yes, sir; the division of earnings from Chicago to and from New York, was 67 per cent. east of Toledo, and 33 per cent. west.

Q. That is, when it passed by water from Toledo to Buffalo, and then on by rail?

A. Yes, sir.

Q. What is the distance from here to Toledo?

A. Two hundred and forty-four miles.

Q. And from Toledo to Buffalo by water, how much?

A. That is a nominal distance, you know. In making up the divisions it is called one hundred and fifty miles; it is actually three hundred.

Q. It is actually three hundred?

A. Yes, sir. We allow them as to mileage one hundred and fifty miles to Lake Erie. That has been assented to for many years.

Q. Do you know whether there are ever any combinations on the lake between the shippers, in fixing the rates of freight, or any agreements among them?

A. I think there are none whatever. I do not think there have ever been any. They do not seem to act in concert. They go on and change

and bid for rates against one another, and always have since my knowledge of the business. Sometimes when freights are plenty, they are more open with their bids for freights. When freights are scarce they make their offer "P. T."—private terms. It is not found out probably for two or three days afterward.

Q. Do you find any practical difficulty in the winter time on moving eastward freight brought into Chicago from the West?

A. O, yes, sir; there is a great difficulty in the winter time.

Q. On what account?

A. It is mainly on account of want of rolling-stock here. That is caused in part by want of facilities to the sea-board—a great want of facilities for holding and receiving and promptly unloading and returning the cars to us. It makes us short of cars on our road.

Q. They are detained there?

A. Yes, sir; they are detained a long time in the very height of the season, and, of course, there is difficulty in moving the freight. We have to cut it off. Now, last winter the amount of east-bound freight was so large, and the difficulties on the other lines—I mean the Fort Wayne line, and the North Shore and Michigan Central line—they suspended for six weeks. Ours was the only line that ran, and we had to cut off all the freight west of Chicago, and receive nothing except the local freight of Chicago.

Q. Why did they suspend?

A. Bad condition of tracks; cars loaded and could not be unloaded; the difficulty of crossing the Detroit River on the Michigan Central. That was peculiar to that.

Q. What effect does that pressure have on the charges eastward?

A. None whatever; it made no difference in the charges whatever. We fixed our charges in October, I think it was. They arrived at the maximum, and we just agreed to say that is the winter rate, and it was maintained through the winter.

Q. And the accumulation that you found here at the end of the embargo was moved at the same rates that it was before?

A. Yes, sir; there was no change in the rate until the break in spring.

Q. Then rates went lower?

A. Then they dropped down gradually to 45 cents on the great staple freights to New York; it was 65 during the winter.

By Mr. DAVIS:

Q. What is the rate now?

A. Fifty-five. They have advanced 10 cents. Forty-five was the rate until this recent advance, three weeks ago.

Mr. NORWOOD. Is that advance due to the increased demand for freight?

A. Do you mean the recent advance?

Q. Yes.

A. Yes, sir; it was beyond the capacity of the roads to furnish cars.

By Mr. DAVIS. What is the per cent. of difference usually between the winter and the summer rates? How much do you have to advance in the winter?

A. Our rates last winter were 65. Our lowest summer rate a year ago this past summer was 40. This summer our lowest rate has been 45 cents, and we have not arrived at our winter maximum at all.

Q. You speak of arranging your freight on the three roads you speak

of, the Fort Wayne, and the two Michigans, so-called. Is it left entirely to the freight agents, or are the companies consulted?

A. There are sometimes when a suggestion may come from the eastern line that we ought to advance, and in that case the officers, I mean the presidents of the lines, which are all east, are consulted; but almost universally, in the case of a change of rate, it is done by the agents here.

Q. By the general freight agent?

A. By the general freight agent, or their representatives of the three great roads going east from here.

Q. Now, if two of them say they ought to have been advanced and one says not, is it a rule with you that the majority rules?

A. That is the rule, but we do not always insist upon it. Take a case in point: A pressure was brought to bear upon our officers East for an advance by the general manager of the Fort Wayne road. It was suggested by the Pennsylvania people, and they appealed to our general manager—our acting director really—Mr. Stone, of Cleveland, to order his officers to make an advance. Mr. Stone wrote me in reference to it, wishing I would consult with the other men here in reference to an advance. I was perfectly willing to advance myself; it would not make a snap of difference with us. I went to the Michigan Central officers, and they were decidedly opposed to an advance. They had a good deal of freight on hand at the old rate that they were not able to get out of the elevators here in time, and they did not think it judicious to advance. Since that time this financial crisis has come on, and we have prevailed on the Pennsylvania people to put it off one week; did not like to advance and did not like them to advance. We hold the rate under them; they put it off. The question of advance is pending to-day whether the two lines shall advance and leave the one out running at a lower rate. I do not suppose, however, that it will take place. It is a thing that never did take place yet. No line could afford to put itself in that position before the public.

Q. Now, that is an advance from 55 cents to what?

A. From 55 to 60 to New York. I think myself that it is a very injudicious move, and I got the assent of our chief officers at Cleveland, this morning, to that effect; that they thought under the circumstances that it was premature, and not advisable under any circumstances.

Q. Your line runs in connection with the Erie more particularly, does it not?

A. No, sir.

Q. Or New York Central?

A. Yes, sir; we run on both roads. We work over both of them. We have the lines over our roads that run regularly on each of these roads.

Q. Has the New York Central water transportation from here or not? How is that?

A. I do not know. I cannot speak positively in regard to that. I have understood, however, that they have a line of boats that run in conjunction with them from Chicago. How far they control those boats I am unable to say.

Q. I think I saw a line here which was pointed out to us running in connection—the Western Transportation Line.

A. Yes, sir; that is the line.

Q. Running in connection with the New York Central?

A. Yes, sir; it does.

Q. Do you know the way they regulate the freight between them—in what way they *pro rata*?

A. No, sir; I never took any notice of that at all.

Q. Have you any knowledge that you can give us on that point? The object is to see how much cheaper, if at all, they haul than all rail routes—how they divide their freights.

A. I would tell you in a moment, if I knew, without any hesitation at all, but I do not know. I do not know what their terms are.

Q. Who could give us the information as to how they *pro-rate*?

A. As I understand it—I do not understand it particularly from the officers of the road at all—they are always to have the same rate as the rail-line. If they have any less I do not know anything about it. Some years ago there was an arrangement with some of the boat-lines by which they got a trifle less—a couple of cents. I think, however, that was all laid aside. I would rather not say anything about it, and, in fact, I do not know anything about it. It was before the lines consolidated as they are now in their working.

Q. Do you have the regulating of what is termed the through lines of transportation—the different lines, the Blue line, &c.?

A. We make the rates for those lines. They run over our respective roads—some on one road and some on another—and we make the rates for those lines and they have to carry them out, and are not allowed to vary from them.

Q. Is that rate the same as they have been talking about to-day—55?

A. Yes, sir.

Q. Then that rate, if application is made to you on one of these lines, it is the same?

A. Yes, sir; if a man should come to me to-day and want to ship freight I would ask him what line he wanted it to go by. He would say Red line, Great Western, Empire, or Shore line. I would send it by any line he said at the same rate.

Q. If he makes no choice then you select yourself?

A. Yes, sir; we send it whichever way is most convenient.

Q. Does all the freight go by some one of these lines, or does some go that does not belong to any of the lines?

A. There is a great deal of optional freight comes to me. I have a great deal of freight consigned to me direct from the back country—from San Francisco, Salt Lake, all over Iowa, Wisconsin, and Minnesota. That is an optional freight, and I send it by any line I please. These is no line mentioned at all.

Q. Does each of these lines have an office and an agent here?

A. Yes, sir; they are obliged to keep representatives for each line.

Q. How are they paid?

A. They are paid a salary.

Q. By the railroad companies?

A. Yes, sir; all the agents of the different lines are sustained by salaries.

Q. They have not a percentage in the lines?

A. None on our roads.

JOHN NEWELL, president of the Illinois Central Railroad, examined:

By the CHAIRMAN:

Question. We will be obliged to you if you will tell us what you know about railroads.

Answer. Well, gentlemen, I have come to the conclusion, like many

people, that I know but very little about a business I have been following for a life-time.

Q. Well, commence with the causes of complaint against the railroads in this locality and State. Do you know what they are and what the foundation is for them? There are complaints of discrimination and of overcharge. I believe that covers the ground, substantially.

A. Those are pretty deep questions. I have thought considerably of the matter. The great cause of complaint here in Illinois was first created by the low price of corn last year, and that was simply brought around by causes that I suppose were not under the control of anybody here; it was brought around simply by the immense over-production, which put the value of the surplus simply at the price at which the European supply could be delivered in Great Britain; or, in other words, the Liverpool price controlled the price here, and the cost of getting it to the sea-board, difficulty with the freight crossing the ocean—which were large and have been increasing since—left a margin here of 18 to 20 cents a bushel at the stations around Illinois last fall, which was an exceedingly low price. That is, as I view it, the fundamental cause of the complaint. But, beyond that, the farmers and shippers all about the State have discovered that the local charges of all of our railways here where competition did not exist were a good deal higher than they were where there was competition. We have all discovered that where we cannot get the price we want for carrying on business, to pay a fair dividend on the values of the property, we take what we can get, and the consequence was that we were all hauling property from competing stations at a great deal less rates than from intermediate stations. That, of course, attracted attention here, and perhaps was the immediate cause of the great complaint about discrimination and about extortion.

But, as I view it, the other cause is really the fundamental cause of the whole complaint. The prices for the transportation for one hundred and fifty or one hundred miles out of Chicago, on grain, are perhaps 3 to 4 cents per ton per mile, while rates from here to the sea-board, and from the same stations in the interior of Illinois to the sea-board by direct route, were about a cent and an eighth to a cent and a half per ton per mile. People seeing this difference, say "You are extortionate," where we charge from 3 to 4 cents. On the other hand, the prices that we get—taking Mattoon, one hundred and seventy-three miles south of Chicago—it has a road direct to New York, all rail, it has 5 cents a hundred above the rates existing from Chicago at the same time; sometimes 10 cents, and from 5 to 10 cents is the difference. We have hauled a good deal of grain from Mattoon for 10 cents a hundred pounds. We charge from Kankakee, fifty-six miles south of here, I think, 11 cents, if my memory is correct; and you see 11 cents for fifty-six miles, and 10 cents for one hundred and seventy-three miles creates at once this feeling of extortion and unjust discrimination. Now, those two states of fact are the real cause of the complaint in this State against the railways.

Q. What are the causes of that discrimination?

A. The principle is simply this: We say that the prices we are charging for local business are fair prices, and on which only we can maintain a fair income upon the value of the roads. For when we come to a station where the business either goes away from it or is taken at a small advance over the cost, we say we will keep that business as a small help added to the general result, and enable us to make much better dividends. That is to say, if we continued our high rate we would lose entirely a traffic which pays us a small profit; and we judge it better to

retain that small profit, as it helps, if you please, to keep down the prices at an intermediate station.

Q. Your theory, then, is that your prices are reasonable at the intermediate stations and unreasonably low at the others.

A. Yes, that is our position. We say this: The volume of business upon the majority of the lines of Illinois and the States west of Illinois is so small that they cannot afford to take a price which, upon a line worked up to its capacity, will yield a fair profit.

There are none of the lines in Illinois, even single tracks, worked up to their capacity. I might, possibly, except the Burlington road, having a great many branch lines in the West. It is doubling its tracks, and is perhaps worked up to its capacity as a single-track road. But apart from that there are no railroads in this State, or west of here, which are worked up to anything like their capacity as a whole.

Q. Have you ever made an estimate as to the net percentage paid on all roads of the State?

A. No, sir. This morning, after getting notice to come here, I set a clerk to work with Poor's Manual to get up some figures, but found they were not entirely correct. It occurred to me that you had all that information yourselves, and that it would be of no use for me to attempt to present that to you. I had this statement made, and unfortunately I left it on my desk as I came away. I supposed I had it in my pocket.

The average earnings in this State were a little over \$8,000 a mile for all the roads; and the earnings in this State are double, I think, those of either Iowa or Wisconsin. In the State of Minnesota you get only a little over \$3,500. I think Iowa is a little upwards of \$4,000, and Wisconsin \$4,000. The expenses here I do not know how much. Our expenses last year were 67 per cent.

Q. You have high State taxes to pay?

A. Yes, sir; we suppose our taxes to be double that of any roads at present. On the new basis that they are pressing here I suppose they will be about the same as other roads. Ours is a fixed tax of 7 per cent. of the gross earnings, amounting to \$450,000 or \$500,000.

By Mr. DAVIS:

Q. That was due from the land-grant?

A. Yes, sir.

Q. That was fixed as a tax in lieu of all other taxation?

A. Yes, sir.

By the CHAIRMAN:

Q. Have you in your mind the average cost per ton per mile of moving freight on your road?

A. Our total earnings on freight last year were $2\frac{1}{10}$ cents per ton per mile, and our expenses, 67 per cent., would make about a cent and four-tenths the cost. But when I say that is the cost for moving freight—our passenger business—we do not keep accounts in such a way that we can say absolutely what the cost of the passenger and freight service is separately. That is simply the average. My impression is that the passenger service costs us 80 per cent. probably. The traffic is not large in passengers, and the expenses are large in proportion. I think 80 to 90 per cent. is really our cost for passengers, which would bring the freight cost down possibly to 62, or something like that. Our earnings from freight are about three times as large as from passengers.

Q. What would that make the cost per ton per mile?

A. That would be $1\frac{1}{2}$ cents per ton per mile as the cost.

Q. Your road has no steep grades?

A. No, sir; we have no grades over 40 feet per mile. Forty feet is the maximum. But, with the exception of the two hundred and fifty miles, from here to Centralia, where we have no grades of over 32 feet per mile, we have on the remainder of the line 40 feet grading so frequently that it is really the ruling grade. That is, we assume that our trains have to haul over 40-foot grades. We haul on an average about twenty-three cars over 40-foot grades.

When I give cost it is the operating expenses and State taxes included. I shall be glad to send you a copy of our report, giving a full statement of the operations of last year in detail. I had one in my pocket which I intended to have brought, but accidentally left it.

Now, our cost is, I suppose, about as low as that of any road in this State, having equal tonnage per mile, and for its length. For a long distance we can haul freights a good deal less per mile than short distances. We can haul freight from Dubuque to Cairo, four hundred and fifty miles, a good deal less than we can haul it from Dubuque here, two hundred miles. And we can do it for this reason, that our supply of fuel in Southern Illinois is obtained at a low rate. I pay down there not over an average of \$1.40, perhaps a third of the year, per ton for coal, while in the northern part of the State we pay \$2.25, and have to haul it a long distance. At the lower end of the road we get coal within thirty-six miles of Cairo, and from there up continuously a hundred miles.

We have one locomotive, out of one hundred and ninety-seven, burning wood, and that is simply for the convenience of a paymaster who does not like a coal-smoke in his car. I do not think there is any long road in the State that has as cheap fuel as we have. Some of the shorter lines in the southern portion of the State, running east and west, get on the average cheaper fuel than ours, and no others.

By Mr. DAVIS:

Q. What did you say was the cost of your fuel in the southern part of the State?

A. About \$1.40 it averages by the year per ton.

By the CHAIRMAN:

Q. What, in your judgment, would be the reduction that could be made on that double-track railroad, properly equipped, running at the most profitable rate of speed—I mean reduction from your rates in this State—that is, the cost?

A. I do not know what the average rates of the eastern lines are, but they carry freight from the West to the sea-board—the through trunk-lines—from one cent and one-eighth to one and one-half cents per ton per mile. In the summer they frequently haul freight from here at 45 cents a hundred, and sometimes a little less than that. They “shade” that, as they call it, say 40 cents. There has been a large quantity moved a year ago this summer at 40 cents, that is \$8 a ton for 900 miles—less than a cent per ton per mile.

Now, I assume that they have lost nothing in moving that freight, but my impression is that eight-tenths is about as low as they can move it at the present cost of fuel, iron, labor, and other expenses of railroads. If that is so, I would say that I believe we can move, here in Illinois, upon our line of railway, if we were fully employed and had ample business to keep double-track road busy, we could move freight prob-

ably as low as it is moved from here to the sea-board, these conditions of grade and fuel being probably as low as you can find in the East. Our fuel is lower, probably, than any railway except the Baltimore and Ohio. I will say if we had business to keep the railway constantly employed, we could probably get it down to that rate; but in regard to that matter I suppose it is impossible for any one to make any accurate estimate of the cost of doing this work. I believe even on the Pennsylvania and New York Central roads, which are the only two roads that are really working up to their capacity as double-track roads, they cannot tell you absolutely and with certainty the exact cost. I was a year on the New York Central, in 1868, and I know my mind was turned in that direction, and I attempted to make an accurate estimate of the cost of moving freight, and could not find data to do it satisfactorily.

Q. Would there be any advantages; if so, what, in a double-track freight-railroad, such as is proposed, over the present mixed system of doing passenger and freighting together?

A. My impression in regard to that matter is that if you could have a double-track freight-railroad, the first cost of which is no greater, say, than the New York Central route—I assume that capital has got to be paid, and that the first cost would be the same as the New York Central—the conditions the same as to grade, cost of fuel, labor, iron, and all that—then there might be a slight reduction made in the cost of transportation on a road having only freight-trains; for it does cost a little something in time, and labor, and interest on the cars delayed, to get these passenger-trains by the freight-trains. In other words, the freight-trains are delayed more on the present lines than they would be on the through lines you indicate. But beyond that I think there would be no saving, and I think there would be but a slight saving there.

My own belief is that with the present railways with the double tracks, and four tracks as the New York Central proposes, they will move as cheaply as it can be done upon the exclusively freight-railway. That is my belief about it, but of course it is only an opinion.

By Mr. DAVIS :

Q. I understand your judgment is eight-tenths?

A. No. I say if they are now doing their work at eight-tenths, I said before, I think that in the Illinois Central, with such grades and the cost of fuel we have, we could do our work at eight-tenths. Now, I think if they are doing it at that rate, that, with the four tracks, and with just such a volume of freight as can be moved upon the two tracks kept exclusively for freight, that it will reduce their cost.

Q. What do you call a reduction?

A. Five-hundredths of a cent. If it is now eight-tenths, I do not believe they would get it below $\frac{75}{100}$ with this change. In laying the additional tracks they have additional capital, of course. The cost of the grading and the cost of the tracks is pretty nearly as much per mile as was the original cost of grading.

Q. They report that the actual cost to them, exclusively of interest or dividends, on the Pennsylvania Central, is eight mills and a fraction per ton per mile.

A. If you use figures which I give, $\frac{8}{10}$ for instance, I would simply say they are based on this assumption: that that is the cost now upon that line. But I do not think the increased expense due to the mixing up of the two trains carrying two kinds of business on the same tracks is so large as to be very appreciably felt. I do not think it is.

Q. Have you given any attention to the probable effects of the improvement of the Mississippi River, and opening the mouth of that river?

A. Yes, sir; that is a matter that has come directly under our observation, and a matter in which our company is directly interested in this wise: I hold this, first, that the water-channels from the West to the sea-board are always to be the cheaper line of transportation; that the cost upon the railways can never be brought so low as it may be brought by water.

By Mr. NORWOOD:

Q. In what proportion?

A. I will say this, roughly: Assume 45 cents a hundred as the cheapest rate from here to New York by railway, that is, \$9 a ton; now we reduce it to bushels of corn, because I have the price of corn fixed in my mind—45 cents a hundred for 56 pounds is $25\frac{2}{10}$ cents a bushel. Now, as against that low rate, vessels can carry corn from here to Buffalo and make as much as railroads do, at 5 cents a bushel; and the party who owns a barge which did tow two other barges last year says that at 5 cents a bushel he can run his barge, pay all expenses, and get 7 per cent. interest on his money, at from $4\frac{1}{2}$ to 5 cents a bushel. Now the ordinary rate through the canal for corn is 11 cents; that makes 16 cents. Of course we must add the charge for handling at Buffalo, which would be a cent a bushel; that makes 17 cents; and, if you please, add another cent for insurance, and that makes 18 cents a bushel. Now, 45 cents a hundred from here to New York is 25 cents a bushel. I will say that relative difference can be maintained; that is to say, if conditions can be brought around by which rail transportation can be reduced by the reduction in cost of rails and coal and labor, that the same items of expense can in the same manner be reduced on the lakes in the cost of the vessel and the cost of running. I say that 18 to 25 cents is perhaps the relative rate from here to New York.

Then, again, if our neighbors here in Canada carry out the system of enlargement, of first the Welland and then the other canals to Montreal, I believe that, as against 18 cents to New York, we can put corn in Montreal (assuming 5 cents from here to Buffalo) at 7 cents more from Buffalo to Montreal, or 9 cents at the outside; or 14 cents as against 18 cents to New York. Now, those, to my mind, are the relative prices by water to the Atlantic sea-board.

As against that, I will assume that from the center of the corn-raising district on our line from Central Illinois it costs 10 cents a bushel, which is about the rate to Chicago. It costs the same rate to Cairo. We will assume Cairo, then, as a shipping port to the sea-board, equally well situated with Chicago; that being so, the price from Cairo to New Orleans is now 14 cents. That is the price to-day; but it is also 14 from here to Buffalo. Now, as against the 5 cents to Buffalo, which is put as the maximum, you can safely put 7 cents from Cairo to New Orleans as the price in these large barges. Then you have 7 cents a bushel to the sea-board, for New Orleans is at the sea-board if that canal down there is completed. You have 7 cents a bushel to New Orleans as against 14 cents to Montreal, and 18 cents to New York by water or 25 cents to New York by rail. There is that 18 cents a bushel difference in the cost to New Orleans as against the cost by rail to New York. Assuming 6 cents to 7 cents to be a fair ocean freight, 7 cents being enough under any of the present conditions from New York—from New Orleans they want 50 per cent. more—they would want ten-pence halfpenny,

or 21 cents. The difference would be three-pence halfpenny, or 7 cents—7 from 25 leaves 18. You have got a gain really from Illinois to Liverpool of 18 cents as against New York by rail, or by water to New York we have 4 cents cheaper than by rail to New York. I have not taken insurance into account in that.

Now, there is this thing about New Orleans: Our shipments there for two years past (last year and the year before) were about a million to a million and a quarter bushels of corn, about two-thirds of which was exported. Last year there was something over a million and a half altogether from New Orleans; but of course you have the statistics for that; and of that exportation during the whole of last year, the sales in Liverpool and the condition were fully up to the condition of grain shipped at the same time from New York. In other words, this climatic difficulty, which is by some claimed to be a great bar to shipments by New Orleans, last year was not, and we suppose it simply because the corn of year before last was thoroughly ripened. We assume here that when the corn-crop is mature and perfect it can be shipped to New Orleans even in the summer with perfect safety.

By Mr. NORWOOD:

Q. If it is not well matured, would it not be damaged by the other route?

A. I think the Montreal route is a better route than the New Orleans route, so far as damage is concerned; but I think the New Orleans route at present fully equal to the Erie Canal. I think that the temperature along the Erie Canal is probably higher during the summer than it is in New Orleans; not the average, but there are days together during which corn afloat on the Erie Canal would be subjected to a greater heat than in New Orleans or in the Gulf of Mexico.

Q. Does the moisture of the climate have any effect upon it?

A. Not when any large quantities go; but when the corn itself is moist, then the heat of the atmosphere and the water together creates damage.

I returned the first of this week from the other side, and I made particular inquiries at Liverpool and at Cork about the conditions of the cargoes from New Orleans. I found in Liverpool a tendency to favor the New York route; that is, they say the New Orleans business is uncertain. But my information there was obtained from large dealers who were at the same time interested in the lines of steamers from New York. One of the gentlemen was a director in the National line. Now, at Queenstown and Cork they told me that while they had some cargoes from New Orleans that were in very bad condition, yet as a whole the New Orleans cargoes were in pretty fair condition; but they did not there say they were better than the cargoes from New York.

By Mr. DAVIS:

Q. Why do you assume 7 cents as the charge from Cairo now, while you say it is really 15 cents?

A. I say this: that the charge now from Cairo is 14 cents, and so the charge was week before last 14 cents. Now, I say, as against the 5 cents which we allow from here to Buffalo as the lowest freight, we may count on 7 cents from Cairo to New Orleans as the lowest. I wish to keep the same comparison.

Q. You assume that the mouth of the river——

A. Now, the situation in regard to that is this: They cannot count on over 18 feet of water at the mouth of the river. That being so, they

cannot run a vessel to New Orleans that will run economically as against the New York harbor. The vessels running into New York draw from 21 up to 24 and 25 feet, and they say that in constructing these steamers, to construct them of large size, which they must do to carry freight cheaply, they cannot do it on this shallow water. Now, that being so, I think it is absolutely necessary to insure 23 and 24 feet of water in New Orleans; and if that water were there, I believe to-day that our shipments of corn by the way of New Orleans to Europe would be, instead of a million bushels a year, six or eight millions. Of course I cannot say that is absolutely so, but I think it would be so. And I think for the country west of the Mississippi River there would be greater advantages than to the Central Illinois people, who have these low rates to the sea-board. As you go West they are higher, of course, and the country bordering on the Mississippi and Missouri could find an outlet south at relatively greater advantage than could Central Illinois.

Q. Is there now any proper convenience at New Orleans for transfer?

A. They charge there 2 cents a bushel for the first ten days. They have one elevator at New Orleans, its capacity being, I think, about 600,000 bushels. I am not absolutely certain about that; but they charge for receiving in that elevator, holding ten days and delivering, 2 cents a bushel; and in addition to that they have one floating elevator, probably as good a one as there is in the country. The charge by the floating elevator for transferring from the barge into the ship I do not know. It ought to be done about as cheaply in New Orleans as it is done in New York. There is no reason why that service could not and should not be done for about the same price.

Q. In your estimate there you take into account, as I understand the question of my friend here, the insurance and the difference in freight?

A. No, sir. I remarked that, in making the difference of freight 50 per cent. at New Orleans over the price at New York, I did not include the difference in insurance.

Q. What would that be?

A. I am not sufficiently advised to give you accurately the difference. It would be something, but no very large amount, per bushel.

Q. Have you given any thought to the Virginia routes going up the Ohio?

A. No, sir, I have not, for the fact that with reference to water communication there I have not that information which enables me to form any judgment. I am not as well acquainted with the face of the country as I ought to be, to be able to give an opinion on that route.

By Mr. NORWOOD:

Q. Have you had occasion to consider the question of water communication from the mouth of the Mississippi River along the line of the Gulf and across the peninsula of Florida to the Atlantic?

A. No, sir, except with reference to the outlet from the Gulf. I have always supposed this: that while the route by Florida is not a very good one for sailing vessels, steamers can always pass; and the difference in time in going around or through is so slight—I had not supposed that it was of such importance as to require my attention; but of that I am not probably fully acquainted. For sailing ships I suppose, at times, it is quite dangerous; but steamers can get round there at all times safely.

Mr. CONOVER. It is very unsafe, even for steamers.

Mr. NEWELL. I have in the last two years spent a little time in New Orleans, and have talked more or less with captains of steamers and

sailing vessels, but not on this subject; but I have never heard them mention the passage around the capes of Florida as being very objectionable. The chief stress they lay is upon the fact of the difficulties of the bar; and that really is the great reason why the port of New Orleans has not been a very large shipping port for all time past.

By the CHAIRMAN:

Q. I was going to ask you, if these things are correct, why is it that so little freight comes by the way of New Orleans?

A. For the simple reason, as I said to you, that vessels that can be run cheaply have got to be vessels of upwards of 20 feet draught of water. Such vessels cannot come to New Orleans with any certainty of getting in. In fact, in the last four years, there has been only one time when there has been 20 feet of water that I know of. At one time our agent in New Orleans telegraphed me as a great fact that there was that day 21 feet of water on the bar; but it was probably a high tide and an exceptional circumstance.

Mr. NORWOOD. I think they can only count on 16 or 17 feet.

Mr. NEWELL. Yes, sir, and they carry vessels jumping them at 18 feet. Now that fact strikes me as the great reason why there has not been a larger business there. Of course the cotton is bound to go out from there, and it generally pays a better freight than most any other class of produce. That being the case, they can afford to send ships to New Orleans to carry cotton that they could not afford to send to carry corn.

By Mr. NORWOOD:

Q. They can afford to pay lighterage on that?

A. Yes, sir. At Mobile the cotton, as I understand it, is loaded from the docks. I was not aware that they lightered very much in New Orleans. I had the impression that they got their vessels to the draught they thought they would get over, and then took them down and jumped them over, as they termed it.

Q. Do you understand that there are any serious difficulties between Cairo to New Orleans?

A. There are no serious difficulties as a rule. A year ago last spring the water was very low, at the time the river was blockaded with ice between Cairo and Columbus, for two weeks. That has occurred only once before since 1855. I was at Cairo in 1856, the 1st of January, when the river was blockaded up there, and I understand it has not been blocked since that time until the year before last. The water sometimes gets low, but at the time I refer to there was 4 feet 10 inches of water only on the bar below Memphis; but that was a very rare occurrence. Now the Mississippi Valley Transportation Company have built some thirty-eight barges for the carrying of bulky grain and other produce down the river. Some of the lighter ones carry 35,000 bushels of grain on 9 feet of water. At the rates at which they have carried it in the past, I assume that you can carry that grain at less than the price I have named, of 7 cents ordinarily.

Q. It was stated by the president of the Rock Island road this morning that out of the fifty-odd roads in the State there were but four that gave any interest.

A. The Burlington, the Rock Island, the Chicago and Alton, the Chicago, Burlington and Quincy, and the Illinois Central pay regular dividends. The Northwestern pays dividends, but spasmodically. They have paid no regular dividends, except on their preferred stock. As I

understand it, they paid their interest on that for some years back without any interruption, but they pay no dividends upon their common stock regularly. Now, the statement that there are but four roads paying dividends is, in that sense, correct. In addition to the Northwestern I do not know of any other road in the State that has paid a dividend for the last four years.

Q. Are there fifty-odd roads in the State?

A. I cannot tell you; but you will find in Poor's Manual a statement of all the roads, and, as a rule, his statements are correct. He takes a great deal of pains in making them.

Q. I understand you that your local freight, not from competing points, is perhaps more than double what it would be from competing points?

A. Yes, sir; that was the case last year. That was the immediate cause of this complaint, as I stated.

Q. Has that been remedied?

A. That has been changed. We have now, under the statute of last winter, regulated our tariff so that we are nowhere within this State hauling freight a greater distance at a less price; in other words, we comply with that law with reference to freights originating and delivered within the State. With reference to freight originating out of the State and carried over it, we hold that that law has no application, and act accordingly. But this immediate cause of complaint of discrimination is removed by our new tariff of July last.

By Mr. NORWOOD:

Q. I will ask you the question I asked Mr. Walker this morning, and get your opinion. Why do capitalists continue to invest their money in railroads that pay no dividends?

A. I do not know that I can give you the absolute reason, but I will give you my idea of it. In 1868 this State had about 3,300 or 3,400 miles of railroad. It has now 6,400. This gain of 3,000 miles of road has been made chiefly in this wise: In 1868 the legislature authorized municipalities to vote aid to new railroads. The municipalities all over the State, led on by speculators—people in the business of building railroads—voted aid to a large extent, generally, all over the State, the aid ranging in one case as high as \$8,000 a mile in local bonds, for which the railroad companies were to give the stock. Now, these gentlemen say: "Here is a railroad wanted; we can go on and get this local aid; we will go along the route and get the vote, and if we can get \$5,000 a mile in local aid, that is very well." They go to work and do it, and then go to a railroad contractor and say, "Here is this large profit to be made in the building of this line." The contractor goes to a banker in New York, with whom perhaps he is associated, and says: "If you can place the bonds of such a railway to a sufficient extent to build that line, we can pocket the profit of this local aid—these local bonds." They do it; and European capitalists five or six years ago, not having acquired as much experience as they have now with the value of this property, were eager to take these bonds at a low figure. They were placed at a low figure, and money enough was raised to construct the line out of bonds, and the contractors simply took as a profit the local aid. Now, that, really, to my mind, is the reason why these roads have been multiplied to such an extent. The individual profit made by the contractors in building them has urged the construction of them.

Another thing I will say in connection with that, as my opinion. The produce of the State, the tonnage to be moved upon the railways in the State, locally has not increased 50 per cent., while the mileage

has doubled. The result is that these railways have to work for years to come, with the best rates they can possibly get, without dividends. In other words, the construction here of the lines has been vastly in excess of the necessities of the State, as a whole.

On the other hand, as against that, the people living upon these new lines, who were twenty miles away from the railway before the new lines were built, have, in the moving of their crops to the railway stations, made a saving in the cost of moving it, which justifies them in the increased tax which they have to pay to obtain the roads, and the increased price they have to pay for moving it upon the railroad, assuming that all capital is going to get its interest.

Q. That explanation would apply to the State of Illinois. But we find railways increasing all over the country, where municipalities are not engaged in building them. The idea is very general that railways say they do not make any money; but it is hard to understand why business men, financial men, will continue to put their money in corporations that do not pay, when the fact is patent before them from the record, according to the statements of railway men, that these railroads will not pay, that they still go on and put their money in.

A. I will say, in regard to that, that if any gentleman goes to Europe, and raises any money on any railway that is not paying interest, he will do better than I think. In other words, you cannot raise money to build a railroad in Illinois on the basis I have named; you cannot do it. The money for the construction of these railways has not been raised in this State, nor in this country. It has been raised from the bonds sold abroad. Very few of those bonds have been sold in this country. There was one road particularly, in the southern part of the State, that was constructed on bonds placed in New York. The party who took those bonds has got them yet, cannot sell them, and has to carry them. I refer now to the Springfield and Illinois Southeastern road. There are other roads; the Cairo and Vincennes road was built on bonds placed in London. They are now in the hands of the banker. Now, the reason they have been able to build these roads is this: some of the lines in Illinois were making 10 per cent. dividends, as was the Illinois Central. The prospectus of the parties selling the bonds shows there is a population in the county and a traffic which will justify earnings equal to those of the Illinois Central, for instance. That road is well known in England and Holland. They go there and say, "There is a line that can do as well as the Illinois Central, and there are the figures to prove it." They can sell these bonds, for the reason that the surplus capital, getting only $2\frac{1}{2}$ or 3 per cent., was willing to go where it could take 10 per cent. Now, in Amsterdam they say they will not take anything except on a railroad making an interest at the present time. In other words, they have become completely loaded with these bonds to such an extent that they won't touch any other, and are entirely dissatisfied. But a year and a half or two years ago these things began to tighten, and in the last year and a half these lines have not extended half so rapidly as they did previously. We have paid 10 per cent. dividends on the stock since 1871. We actually earned last year less than 8 per cent.; but we had a reserve from the land-grant, and we thought last year was an exceptional one, and the directors, as the stockholders were foreigners and might be disturbed at a reduction, said we had better take the chance of continuing the 10 per cent. and make it so as to prevent a feeling of dissatisfaction or panic among small holders abroad.

We have never declared what is called a stock dividend. The

original stock was \$17,000,000, and the original bonded debt was \$18,000,000. As the bonds have been retired, new stock has been issued. The stock now stands \$25,500,000. But the bonded debt has been reduced to even a larger extent. It has been reduced more than the stock has been increased.

Q. Was your road constructed then by money raised on bonds?

A. Partially, yes, sir; there were \$17,000,000 raised on stock. The stock was paid in full, but there were \$17,000,000 in bonds. In other words, \$34,000,000 was the original amount raised in stock and bonds, half and half. That was 705½ miles of road. The bonds have been retired, and as that has taken place stock has been issued, so that the whole bonded debt and stock now stands \$25,500,000 stock, and \$8,000,000 of bonds. About \$33,500,000 is the total stock and bonded debt at this time.

Q. What do you declare 10 per cent. on?

A. On \$25,500,000.

Q. What was the average cost of your road per mile?

A. It now stands at a little upward of \$48,000 per mile, road and equipment.

Q. Does that include repairs, betterments, and things of that kind?

A. It includes betterments, improvements. We are continuing our construction account right along. We add to that \$34,000,000 the cost of every locomotive or car, or the difference in value between iron rails and steel, when we are laying steel—that difference we add to the capital account.

Q. What is the cost of the construction of your road per mile—the railway itself?

A. I cannot give you the figures, sir; but I will send you a report which gives figures in such a way that you can have the whole worked out. I do not remember the details of the cost of the road and equipment. We have about 5,000 cars and 200 locomotives. But in regard to that, I will give you a report which gives the exact figures. I do not attempt to carry them in my mind.

Q. Yours is nearly a south road, is it not?

A. Yes, sir.

Q. Do not the roads running on latitudes pay better than those running on longitudes?

A. As a general rule, I think it is the fact. There are exceptions, however, as to that, but take it, for instance, between the Mississippi River and the Atlantic sea-board, and east and west lines, as a rule, are the better rails,

Q. East of the Mississippi?

A. Yes, sir. I have read a good many articles in the papers about this bar at the mouth of the river at New Orleans, and there are a great many of them that have weight on the subject. But if my ideas about the cost are anything like correct, and if the experience of two years past with reference to the condition with which grain may be shipped through New Orleans is correct, then there is certainly very great necessity for doing something in the improvement of that bar

By Mr. NORWOOD:

Q. I understand you to state that practically from Cairo there will be no interruption from the ice?

A. Not as a rule. There will be exceptions, but, as a rule, the interruptions will be very slight.

Q. They are rare and short.

A. Yes, sir; two weeks is the longest one.

Q. How would it be from Saint Louis?

A. From Saint Louis the navigation is obstructed for during the period of a month and six weeks very much. But from there there is low water. The water between Cairo and Saint Louis is much less than below Cairo. They frequently have as low as 3 feet 6 to 4 feet between Saint Louis and Cairo, when there is 7 feet below Cairo. The Ohio, coming in adds to the volume and keeps the channel deeper. Another thing: the ice below Cairo is affected. I suppose there would be more ice, but from the fact that the Cumberland and Tennessee come from rather a warm region and prevent the accumulation of ice at those points.

CHARLES E. CULVER, president of the Board of Trade of Chicago, examined:

By the CHAIRMAN:

Question. Will you be kind enough to give us some idea of the manner of doing produce business in this city; I mean as to how wheat, corn, &c., are handled; whether it is shipped through, or purchased here, or consigned by parties West?

Answer. All those different modes you mention prevail; but the usual way of doing business is for parties in the country to buy at the different stations along the railways, in those towns on the Illinois and Michigan Canal and River, and consign it to commission houses in Chicago. They hold, or sell on arrival, as ordered, and account to their own correspondents for the property.

Q. There is, then, but a little wheat and corn that is actually bought here, is there? I mean bought by the people, the traders here.

A. Allow me to explain. There are two classes of commission-merchants in Chicago, one known as receivers, who receive grain from the country. They are the parties who are the sellers here. There is another class called shippers, who buy for eastern or foreign account. The receivers sell the property to the shippers. The shippers either buy it for their own account or on orders from the East.

By Mr. NORWOOD:

Q. Your receivers are in the nature of commission-merchants?

A. Yes, sir; they are both in the nature of commission-merchants. But it is very seldom you find the same commission-merchant who works as receiver and shipper. The two kinds of business do not go well together, for you cannot very well do justice to both parties. If you stand between the buyer and seller, it puts you sometimes in an awkward position. The receiver, in order to get the best price possible, wants to go into the market and sell to the highest bidder, and the buyer wants to come in and buy as cheaply as possible.

By the CHAIRMAN:

Q. Is it either of these classes of persons who operate for a rise and fall on what you call the Board of Trade? There are certain speculations in wheat, in which it is forced up or down; is it either of these parties, the receivers or shippers, who engage in that business, or is it an outside organization still?

A. Those transactions are made on 'Change by both these classes of commission-merchants. The Board of Trade here is a medium for speculators throughout the country to operate in grain. It

occupies very much the same position as the Stock Exchange does in New York, so far as that is concerned.

Take our own house, for instance. We have a great many orders from parties in the country, and from the East, to buy grain for future delivery. Then we have other parties who think the prices are high at present and will be lower in future. They order us to sell. And it is to both receivers and shippers of grain who have orders of that kind.

Q. What effect do you think the speculation in grain has upon the producer—whether to decrease or increase his product?

A. The general effect, I think, is to increase the price of grain. There are times when prices are depressed by these speculative transactions. I will tell you why I think prices are enhanced. Parties who sell for a future are those who anticipate low prices. They afterward become buyers, and have to come in competition with parties buying for shipment, and there is double the demand for property that there would be had not these parties made their sales. That applies more particularly when the arrivals of grain are much less than was anticipated. Parties who have sold what we call "short," have to cover their contracts, and they oftentimes have to pay more than the property is worth for shipment.

Q. So that, on the whole, you think it is a benefit to the producer, rather than an injury?

A. I do, sir. I think the last crop of corn in this market, of 1872, was sold for from 3 to 5 cents a bushel more than if there had been no speculation in the market here. Shippers of that property lost, I think, on an average that much per bushel.

Q. Are you engaged in shipping?

A. We are receiving; that is our principal business.

Q. You have no personal knowledge of the shipment by rail?

A. No practical knowledge. We are not engaged in the transportation business. Of course, we have to engage freights very frequently.

Q. Have you any knowledge from conversation with the owners of vessels on the lakes as to the actual cost of shipment to Buffalo?

A. No positive knowledge—no, sir.

Q. Are the business men of Chicago looking to New York or to Montreal as their market—as being the most profitable market for the future?

A. Well, I think that they yet depend upon New York as the great market; but still we are glad to avail ourselves of any facilities that Montreal can offer. We look for increased facilities in trade through Canada. We are not pledged already to any one place.

By Mr. NORWOOD:

Q. What is the expense of handling a bushel of wheat here?

Mr. CULVER. By that do you mean the charges?

Mr. NORWOOD. Yes, I mean the necessary charges that fall upon the producer. I will not say the "necessary" charges, either; I will say customary charges.

A. The charge for selling grain in this market is 1 cent per bushel, and if sold in fifteen days from arrival there is usually no storage—that being paid by the buyer, the same as the freight from here to the East.

Q. Suppose it is sent here for shipment to eastern points, what charges then fall?

A. A party buying property here and shipping it East, pays the commissions, usually half a cent bushel to the party buying it; the storage 2 cents a bushel.

By Mr. CONOVER :

Q. That is elevator charges ?

A. Yes, sir ; also cost of State inspection, 50 cents a thousand bushels ; and that is all.

By Mr. DAVIS :

Q. You stated a moment ago that if sold within fifteen days there was no charge to the owner of the property ?

A. Yes, sir.

Q. Supposing it remains longer than fifteen days—say thirty days ; then what charge is there on it ?

A. The party buying the property buys it with the understanding that he pays 2 cents a bushel storage. If the grain has remained in store long enough for extra storage to accumulate, that comes from the party who holds the property. If you, a shipper in the country, sent me 5,000 bushels of corn, but you held it thirty days, you pay all the storage which accrues, less two cents, which the buyer assumes. Property is also sold in this market that arrives by canal-boat and delivered direct from that to a vessel. The handling charges are only 1 cent per bushel besides the commission.

Q. The commission is a cent for selling ?

A. A cent a bushel for selling.

Q. How much for buying ?

A. In cargo lots, usually half a cent per bushel.

By Mr. NORWOOD :

Q. I understand you, then, that an owner of wheat, shipping it through the Illinois Canal to Buffalo or New York, or any other eastern point, has to pay 1 cent charges only in Chicago ?

A. If it goes direct from the canal-boat to the vessel he has. If it goes into the elevator and remains ten days he pays a cent and a half a bushel.

Q. Is there any necessity for its going through the elevator ?

A. No, sir ; not if the vessel by which it is shipped is ready to take the cargo on its arrival here. But oftentimes a cargo is put into the elevator, and remains several days before the ship is ready to take it.

By Mr. CONOVER :

Q. I wanted to say that there is a statement made here that they charge 2 cents for twenty days.

A. That is, grain arriving by railroad.

Q. For that arriving by boat they charge less ?

A. There is a smaller charge.

Q. They state that they charge the same price for that by rail as by boat—any way, it might come to 2 cents for twenty days, and the same price whether it stayed there twenty days or twenty-four hours.

A. I would state in regard to the storage charges, that they are not uniform. The law of this State requires the elevator proprietors to publish, on the first Monday in January, I think it is, their rates for the following year, and those rates cannot be advanced. They can be reduced. This report, which I have, will give you the rates of storage, and I will read them :

“ On grain received from railroad cars, if in good condition when received, 2 cents per bushel for the first twenty days, or part thereof.”

That is the amount of storage that the buyer of property expects to pay. By the terms on 'change that is the regular storage.

"For each additional ten days, or part thereof, the grain pays half a cent per bushel storage, extra.

"On grain received from canal-boats or vessels, if in good condition when received, $1\frac{1}{2}$ cents per bushel for the first ten days, or part thereof. For each additional ten days, or part thereof, half a cent per bushel."

Winter rates of storage are less. From November 15th to April 15th, the above rates are charged on sound grain until 4 cents per bushel has accrued. After that, no extra storage is charged from the time named. For grain that is out of condition, the elevators claim the right to charge 1 cent per bushel for every five days, or part thereof, to take effect five days after perfect notice has been given that such grain is out of condition.

By Mr. DAVIS:

Q. If we understand now, it costs 1 cent to receive, $\frac{1}{2}$ cent to sell, and 2 cents storage, usual elevator charges.

A. Yes, sir, that is on property that remains in Chicago twenty days or less that arrives by railroad and remains. I mentioned a few moments ago that if it remained in store fifteen days, it could remain without any storage charge. That difference between the fifteen and twenty days comes from this fact, that the buyer of property is understood to have five days—warehouse receipts can run five days—before there is any accumulation of storage; and therefore the man from the country who ships it here can only have the privilege of allowing it to remain fifteen days on his hands.

Mr. NORWOOD. In the items mentioned over by Mr. Davis there is no storage?

Mr. DAVIS. Two cents pays the storage up to twenty days, I understand?

A. Yes, sir.

Mr. NORWOOD. In other words the expense is three cents and a half?

A. Yes, sir; a man in the country, though, shipping grain to Chicago can allow it to remain in store here twenty days by paying but 2 cents a bushel, unless he engages the services of some one to attend to his business. You, living in Chicago, can buy grain in the country and pass it through Chicago, leaving it in store here twenty days, and it costs you but 2 cents a bushel.

The CHAIRMAN. Then you can proceed to ship it yourself?

A. Yes, sir; other charges are for services rendered or commission charges.

By Mr. NORWOOD:

Q. How is it on grain received by water?

A. One and a half cents per bushel for the first ten days or part thereof. The other is 2 cents for twenty days, as I have said before. The reason of that is this: that car-loads are small lots, while that coming by canal are usually canal-boat loads of 5,000 or 6,000 bushels.

Q. It is more trouble to transfer, in other words?

A. Yes, sir.

The committee here adjourned to meet at the Fifth Avenue Hotel, in New York City, October 16, 1873, at 10 a. m.

NEW YORK, *October 16, 1873.*

The committee met pursuant to adjournment.

Present: The chairman and Messrs. Norwood, Conkling, and Davis.

CARLOS COBB, of the New York Produce Exchange, examined.

The CHAIRMAN. The committee requested your presence for the purpose of ascertaining more definitely the mode of doing business, or the mode of receiving freight from canal-boats and cars, &c.; and if you can give a statement upon that subject, or any connected with the terminal facilities, and the management of freight received here, we would be obliged.

MR. COBB. My attention was more particularly called to the transfer of grain by rail, &c., and I will give you a few facts with reference to that.

Before stating them I would like to correct one or two statements which I have met through the public prints, and in no other way. I did not hear them made. They were made on the part of some of the agents of the fast freight-lines who have appeared before your committee. I think a statement made on behalf of one of them was that one great difficulty here was the deficiency of elevators and storage-room. Am I correct in such a statement?

The CHAIRMAN. Yes, sir.

MR. COBB. If he refers simply to storage-room, he is mistaken. If he refers to transfer-elevators, he is mistaken. If he refers to facilities at the termini of their several lines, he is correct.

The grain-storage capacity of New York is about 13,000,000 bushels. The largest quantity ever held in store at one time was something less than this capacity. Usually not more than half this capacity is filled. Nor is it true that the rates for such storage, compared with western places, are excessive. Storage at New York on wheat and corn is $1\frac{1}{2}$ cents per bushel first ten days, and $1\frac{1}{4}$ cents each ten days following, equal to $2\frac{1}{4}$ cents first month. For sixty days, would be 3 cents per bushel, on which, at delivery, the grain is credited $\frac{3}{8}$ cent for weighing; net, $2\frac{5}{8}$ cents per bushel, sixty days' storage. At Chicago and Milwaukee the charge is 2 cents for first twenty days or any part of it, and $\frac{1}{2}$ cent each ten days thereafter, which for sixty days is 4 cents per bushel, and without any drawback. In New York there are $\frac{3}{8}$ drawback.

Owing to moisture of the atmosphere at New York, grain is stored upon floors, and spread, involving a large amount of labor and room; while at western and drier climates deep bins are safely used, and the work almost entirely performed by cheaper steam; this, to say nothing of the large difference in cost of ground and building, makes the disparity still wider.

Commissions are not higher at New York than at western places for similar services. The completion of the transportation undertaking on the part of the railroads is by lighters from Thirty-third street, New York, or from Jersey City, Hoboken, or Communipaw, to some usual place in New York, such as Chambers street, Coenties Slip, &c., and then becomes subject to the order of consignee. If grain, it is delivered, lighterage free, alongside buyer's ship, store, or pier. Prompt delivery according to quantity contained is required, or demurrage charged for default. This lighter delivery from termini of the roads to consignee's vessel, store, or dock has usually been farmed out to middle-men or parties having neither interest in the roads nor in sale of the property. The roads contract to pay them a certain sum per ton, piece, or bushel, with permission probably to make such incidental profits out of the business

as they may be able, such as grain-sweepings, remnants, unclaimed goods, demurrages, &c., and upon grain a recent invention has been put into practice, viz, charging $\frac{3}{4}$ cent per bushel for what is called elevation, which is simply the act of discharging their lighters. Should the Cunard steamers require A. T. Stewart & Co. to enter the holds of their vessels and search out and remove their merchandise as come to, or the equivalent, by paying the Cunard people for doing such work, it would be the exact equivalent for this charge of $\frac{3}{4}$ cent a bushel for unloading their lighter; *i. e.*, the grain pays for being transported according to tariff rate, and, in addition, is then called upon to pay an uncontemplated charge of $\frac{3}{4}$ cent per bushel for unloading the carriers' cars or vessels, while, the world over, common carriers load and unload their own vessels.

Mr. SHERMAN. That charge is not paid by the railroads?

Mr. COBB. It is made with these middle-men, to whom the railroads farm out its delivery.

Mr. DAVIS. Is that the through lines?

Mr. COBB. Yes, sir, all of them.

Mr. DAVIS. Are the middle-men usually the men who control the through lines?

Mr. COBB. No, sir. I cannot tell what interest they may have otherwise, but it does not appear that they have any interest in these lines. Their interests are interposed between the lines and the customers of the lines.

Mr. DAVIS. It does not reach the consignee until it goes through the hands of these middle-men?

Mr. COBB. Yes, sir. For instance, for many years O. H. P. Archer had the lighterage for the Erie Railway, and handled all their property, taking it over at Pavonia Ferry, and delivering it on this side either at Chambers street, Pier 9, or alongside of ship; and at present Mr. Staring has the same business for the New York Central.

Mr. DAVIS. Do the railroads themselves keep it under their control until it is placed in the lighter and delivered?

Mr. COBB. Yes, sir.

Mr. DAVIS. And there is no additional charge?

Mr. COBB. They pay these men the same per ton or piece for this service of receiving it from their cars, and bringing it down or across to the ordinary places for receiving this sort of property.

Mr. DAVIS. Do you know what they pay?

Mr. COBB. I do not know positively. I presume that these contracts have been somewhat varied at various times. I think the lowest that has ever been done, or reputed to have been done, was 60 cents a ton on all their stuff, which amounts on a bushel of wheat to about a cent and six mills.

Mr. DAVIS. Are they what you term the middle-men?

Mr. COBB. They are the middle-men. They have no interest in the carrying business or in the sale of the stuff. Their sole pursuit is to receive it from the cars at Jersey City, Thirty-third street, or Manhattanville, wherever they may for the time being meet these lighters, and to bring it down to the usual place for disposing of this property. There are usual places where this property is brought.

Mr. DAVIS. Those middle-men are appointed by the railroads?

Mr. COBB. Contracted with by the railroads. Mr. Staring has this business for the New York Central, and it has been esteemed a very thrifty business on the part of all of them. At all events those men have made fortunes.

Mr. NORWOOD. Who makes the charge upon wheat—the railroad, or these middle-men?

Mr. COBB. The middle-men. When the grain is discharged, in comes a certified bill from Mr. Staring—or Mr. Archer, when he was doing this business—as to the correctness of the elevation bill, $\frac{3}{4}$ of a cent per bushel; and as to the correctness, too, of another bill of the same amount, $\frac{3}{4}$ of a cent per bushel for weighing; and the consignee pays that charge.

The CHAIRMAN. A cent and a half, then, for the two?

Mr. COBB. Yes, sir; the consignee pays that charge. Consequently the grain pays it.

The CHAIRMAN. Starting from one of these points—Thirty-third street, for instance—before you reach either of those charges named there is a charge for putting it on to the lighter and carrying it. Who pays that?

Mr. COBB. No; that is the contract—the undertaking.

The CHAIRMAN. The railroads pay that?

Mr. COBB. Yes, sir.

The CHAIRMAN. That is included, then, in their charge for freight?

Mr. COBB. Yes, sir. We know nothing of their arrangement in regard to that.

The CHAIRMAN. But this cent and a half is in addition to their published charges for freight, or their actual freight charges?

Mr. COBB. Yes, sir.

Mr. NORWOOD. That is collected, as I understand, by the railroad?

Mr. COBB. No, sir; by the middle-men, or lightermen, as we term them.

Mr. NORWOOD. Out of the consignee?

Mr. COBB. Yes, sir; and consequently out of the grain. I will go on a step further, so that you will see the whole process. Weighing is done in the process of elevation, and a part of the act, since it consists simply of passing the grain through a hopper in given quantities, tallying these draughts, and running it from such hoppers to buyer's vessel or store. This completes the process of delivery. The additional charge for such weighing is $\frac{3}{4}$ cent per bushel. This is divided between the grain and its buyer, $\frac{3}{8}$ cents to each. By this ascertainment of quantity the lighter and the elevator makes their charges. In canal transportation the boats unload themselves, and consequently while the elevators get $\frac{3}{4}$ cent for elevation and weighing, the boatman pays it; it is unloading his boat. Instead of doing it by the old process, employing trimmers and shovelers to take it out by hand, it is done now by steam, at a little greater expense, but that is paid by the boat. But in the railroad business the old rule is reversed entirely, and it is made a tax upon grain. These elevators have usually no storage capacity whatever, but are floated to any dock or ship, and simply used to lift the grain from the lighter to the ship, and ascertain the quantity, by which buyer and seller settle very much the largest proportion of all the wheat and corn received at New York, and, perhaps, as great a proportion of oats, rye, and barley is handled in this way. Very little properly goes to the stationary elevators, but such as is designed for holding in store for improvement in market. These middle-men are supposed to have made this business, interposed as it is between the railroads and their patrons, very profitable indeed. I believe that covers the whole, unless my associate, whom I would like to introduce to the committee, may think of something further. He is largely engaged in this business.

Mr. DAVIS. I do not know that I fully understood the difference between the cost of rail and water when each arrived at New York.

Mr. COBB. Anything arriving at New York by canal, the boat discharges itself. Consequently the only charge then against the grain is for the weighing, which is $\frac{3}{4}$ cent, of which the buyer pays half and the grain half. This unloading is entirely done by canal at the cost of the boat. When it is received by rail, as I have said before, it is put into lighters. That is a part of the transportation.

But another invention has been adopted in the last few years, namely, taxing this grain in lighters $\frac{3}{4}$ cent for elevation or unloading. Instead of unloading it at their own cost, the cost is taxed against the grain, and the additional charge to that of $\frac{3}{4}$ cent for the weighing.

Mr. DAVIS. There is then $\frac{3}{4}$ cent difference in favor of water?

Mr. COBB. Yes, sir, in that respect.

Mr. DAVIS. Does that put the grain either in an elevator, in vessel, or in store?

Mr. COBB. The storage is another department. This is all done, as I have remarked, by floating elevators that have no storage capacity, merely lifting machines to take grain from the lighter, weigh it, and spout it then into a ship, or a dock, or to another lighter, or anything as it may be required. They have no storage capacity whatever. Anything that is to be held in store takes another direction.

The CHAIRMAN. Then state how that is done afterward; what is the process after that when it goes to an elevator.

Mr. COBB. When it goes to store there it is discharged by the store elevator, and, of course, taken into store subject to the charges I have given.

The CHAIRMAN. Are those store-houses usually on the river?

Mr. COBB. They are mostly on the Brooklyn shore, Atlantic basin.

The CHAIRMAN. Then the cent and a half for weighing and discharging places it near the elevator, so that the next charge is the elevating it, and there is no charge for transporting from these lighters to the store-houses?

Mr. COBB. Oh, no sir; the lighterage is free.

Mr. DAVIS. What did you state the elevator's charge was a bushel?

Mr. COBB. Three quarters of a cent per bushel.

Mr. DAVIS. For what length of time?

Mr. COBB. There is no time.

Mr. DAVIS. How long will they let it remain in the elevator?

Mr. COBB. What I am speaking of here are floating transfer elevators. I suppose your inquiry is directed to the storage—the elevators as a mechanism of a store.

Mr. DAVIS. Yes, sir.

Mr. COBB. Our terms are $1\frac{1}{2}$ cents on corn and wheat for the first ten days, comprising this weighing. That is different from the railroad business. The charge is also $\frac{1}{4}$ cent each ten days following that. The rates are the same through the whole season.

Mr. DAVIS. What is your system of inspecting? Have you one?

Mr. COBB. We have no inspection.

The CHAIRMAN. When it goes into storage you avoid this $\frac{3}{4}$ cent weighing?

Mr. COBB. No sir; it is collected still by the lighter for discharging their boats.

The CHAIRMAN. Then that is only $\frac{3}{4}$ cent for the storage for the ten days?

Mr. COBB. But the lighter collects the $\frac{3}{4}$ cent for discharging the boat, which in a canal boat would be paid by the boat.

The CHAIRMAN. And $\frac{3}{4}$ cent for weighing?

Mr. COBB. Yes, sir.

The CHAIRMAN. Now you have reached the boats of the elevator?

Mr. COBB. Yes, sir.

The CHAIRMAN. Now, if it is taken up there for ten days, $1\frac{1}{2}$ cents is charged. Is there $\frac{1}{2}$ cents paid or three-fourths deducted?

Mr. COBB. The charge is precisely the same.

The CHAIRMAN. So that if it goes through the lighter to the warehouse and is deposited there, there is 3 cents charges.

Mr. COBB. No, sir.

C. R. HICKOK. The Chairman misapprehends. The lighter does not pay the weighing. The $\frac{3}{4}$ cent is paid by the lighter for elevating the grain from the canal-boat into the warehouse. It is collected of the grain. Then the charge for the first ten days' storage is $1\frac{1}{2}$ cents a bushel. That includes $\frac{3}{4}$ cent for weighing, paid by the grain to the warehouse.

The CHAIRMAN. Then the discharging and the ten days' storing amount to $2\frac{1}{4}$ cents?

Mr. HICKOK. Yes, sir; but that does not include the whole lighterage. The rest of the lighterage is paid by the railroads.

Mr. DAVIS. What is the total charge to receive grain from canal or railroad, and stow it into an elevator and keep it there ten days; all the charges?

Mr. HICKOK. That is $2\frac{1}{4}$ cents from the railroad, or $1\frac{1}{2}$ cents from the canal-boat. In one case the canal-boat pays the elevation, and, of course, that is put onto the freight of the canal-boat.

The CHAIRMAN. But in adding the terminal charges to the rail or the water, you add $\frac{3}{4}$ cent to the rail?

Mr. COBB. Yes, sir. In other words, the grain has to pay for its own unloading to the common carrier of the grain by rail, which makes a very high rate of lighterage, especially as no quantity is guaranteed whatever, and no responsibility for quantity.

I will mention two or three evils which we would like to see remedied. Shortage, which varies from $\frac{1}{2}$ to 10 per cent.; 1 to 3 per cent. not uncommon without ability to locate it, yet the natural shortage should not equal 1 per cent. Thefts along the line and from railroad lighters have not been of unfrequent occurrence. As bills of lading are usually given "quantity unknown," there is less responsibility and doubtless less care on the part of men in charge than if the road had become liable for quantity.

Mr. SHERMAN. As to shortage, suppose 1,000 bushels of wheat leaves Chicago for New York, do you mean to say that when it gets here there are only 900 bushels on the average?

Mr. COBB. I mean to say this, that a shortage of 10 per cent. has occurred, without any ability to trace it, in several instances; but 1 to 3 per cent. is not uncommon. Is that your experience, Mr. Hickok?

Mr. HICKOK. Yes, sir.

Mr. COBB. The natural shortage we are convinced is less than 1 per cent. It came through at $\frac{1}{2}$ per cent. That arises from cars probably not swept out entirely clean, &c.

Mr. SHERMAN. Who loses that?

Mr. COBB. The shipper from the western point, without recourse, unless you can prove that the cars have been wrecked, or unless you can prove the very difficult thing that thefts have been sustained while in

the hands of the road. It is a loss absolutely to the owner of the grain without redress.

The CHAIRMAN. How do they provide for that margin at those western points?

Mr. COBB. They require a wider in the New York market.

The CHAIRMAN. That is, they pay so much less for it, calculating on the shortage?

Mr. COBB. O, no; there is no railroad provision for it.

The CHAIRMAN. But I mean, the owner at Chicago in buying grain there will pay so much less for it, on account of this shortage that has to suffer here.

Mr. COBB. That would be a philosophical deduction of course. If he expects so much loss in transit, and so much expense, commissions, lighterage, and elevations, and all that, of course it comes into the estimate.

Mr. DAVIS. Is that the same by water?

Mr. COBB. No, sir; the quantity is filled.

Mr. DAVIS. They guarantee it.

Mr. COBB. It is simply a plain bill of lading, where they are required to fill the quantity.

Mr. DAVIS. What would you suggest for the remedy?

Mr. COBB. The suggestion I make for a remedy would be that the railroad should guarantee quantities. Then it would become their interest to look out that those cars are not broken into, and it would be much more satisfactory to the West to pay a higher rate of transportation, as well as for the eastern man, when he is advancing his money to the western man on this property, if he knew a quantity certain that he was to receive.

Mr. DAVIS. That would require the railroads, would it not, to send an agent to each warehouse and see the grain weighed in?

Mr. COBB. Warehouses are in charge, in most places, now, of railroad men in all these lines.

Mr. DAVIS. I understand if you are in Chicago, or any other town, and you order one or ten cars, they send it to your elevator and you load it yourself?

Mr. COBB. There the elevators are private property; that is, so far as this: that they may be run by individuals; but all the freight brought by certain railroads formerly was, and I think to a great extent is still, delivered to certain elevators. It was a kind of arrangement between the road and parties running the elevator. Is not that the arrangement still, Mr. Hickok?

Mr. HICKOK. I think it is.

Mr. COBB. These cars run over each other's road to almost any extent. That would be one remedy. Perhaps it would be a little impractical to locate scales, &c., at all the small places where grain is picked up, and to meet that difficulty I have suggested another idea, which I will give directly.

Another complaint is overcharges, and they are of so frequent occurrence, either in rate of freight or quantity, that some have supposed it the result of system, the result of which is, very considerable sums of money are accumulated by the roads and remain without interest weeks, and sometimes months, before adjustment of claims are made; and small amounts of such overcharge are not claimed at all and lapse to the roads.

The CHAIRMAN. What do you mean by overcharges in that sense?

Mr. COBB. We receive a bill of lading, 24,000 pounds, from Iowa to

New York, at 60 cents a hundred-weight. Nothing is more common than to find the weight raised 3,000 or 4,000 pounds sometimes, and the rate raised 5 or 10 cents a hundred, and it must always be paid down, paid in advance, from the fact that the delivery-department and the freight and money department of these roads are all distinct institutions. It is too much to have the delivery-department canvas bills of lading, and he is compelled to receive the sum demanded, even if he knows it is wrong; that is, if it is met by a bill of lading stating another rate of freight, he must receive the money. And the repayment, the liquidation of this thing, the examination of the original bill of lading, and the rate that we have paid, comes before another department, and it is sometimes six months before it is ever reached. I should judge by my own experience—and there are parties doing a good deal more business in railroads than I do—that the railroads must have a good many thousands of dollars constantly in their hands without interest, and small sums for parties who are not regular receivers, and I do not suppose make any claims at all. The sum must be very large.

The CHAIRMAN. What excuse do they make where a certain cargo of wheat, for instance, is shipped from Iowa at 60 cents, for charging 65 cents?

Mr. COBB. There are no excuses made. The charges are imposed.

Mr. CONKLING. How come these changes in rates and weights?

Mr. COBB. I cannot tell where they are imposed; perhaps here; perhaps in some station along the line; perhaps up at Athens or Buffalo; I cannot say where it is done. We only know that when the freight-bill comes to us with the demand for payment, that the rate may be 70 instead of 60 and the rate raised, but we must pay according to that bill as demanded. It may be raised from 20,000 to 25,000. Cars are supposed to hold from 20,000 to 25,000 pounds. All we have to do is to pay the freight-bill as made out. All the delivery-department has to do is to collect when it delivers, and that is in advance of the delivery, the freight-bill that is sent on to them.

Mr. DAVIS. Does that apply to the individual lines; through lines?

Mr. COBB. It applies to all of them, without any exception.

Mr. JONES. In other words, parties receiving the freight have to go to the freight-depot with their bill receipted before they can obtain their property?

Mr. COBB. Not quite so. The freight-bills are distributed generally around to the offices, and one day, or perhaps the next day, a check is demanded; or three or four days may elapse, the aggregate becoming \$6,000 or \$7,000. And it is useless to ask the delivery-department to examine and compare their freight-bills with the bill of lading which you have received.

The CHAIRMAN. The rule is to pay, and then seek the pay-department for redress?

Mr. COBB. Yes, sir.

Mr. DAVIS. I do not know that I understand yet the difference between the through line—that is, the individual line, the Union, the Globe, and other lines—and the road proper. Now, if your grain comes by one of those lines, do you go to the railroad to pay your freight or do you go to that office?

Mr. COBB. They collect at our offices.

Mr. DAVIS. They collect themselves?

Mr. COBB. Yes, sir.

Mr. DAVIS. You go to them, then, for anything that is wrong?

Mr. COBB. No, sir; we make up the original bill, and then make up a

claim stating the difference as it should be, and it is sent directly to the head offices of these lines, or the road itself. The fact is, we do not know much about the roads any more. It is all done by fast-freight lines pretty much.

Mr. DAVIS. You spoke of shortage; sometimes it is large?

Mr. COBB. Yes, sir.

Mr. DAVIS. Do they require you to pay the freight on it if you show that you are short? Do you have to pay the freight on what is started or what you receive?

Mr. COBB. I will meet that in a moment by the statement of how that is done. It varies a little. The Erie Road have a track-scale over here at Jersey City. It is an institution that has been created within a few years for the purpose of locating, as far as possible, where shortages occur. They settle their freight and liquidate claims by the track-scale weight at Jersey City; but while the lighter is a part of their line of transportation to deliver it to New York, as they have billed their stuff, or to buyer's vessel or dock, they will not pay you for any deficiency between the track-scale and the delivery of their lighter at all. If their lighter should turn out a thousand bushels short, or no matter what shortage it may turn out short of that track-scale, they will still collect freight on the track-scale weight at Jersey City.

The CHAIRMAN. Can there be a difference between them?

Mr. COBB. Sometimes very great.

The CHAIRMAN. How can there be an honest difference?

Mr. COBB. That is the question. We have sometimes found thefts going on. They do not hold themselves responsible for anything unless you can bring it home to them, which is a very difficult thing.

Mr. DAVIS. Do they weigh their entire car on the track-scale?

Mr. COBB. Yes, sir.

Mr. DAVIS. And subtract a dead-weight?

Mr. COBB. Yes, sir.

Mr. DAVIS. Now, in dry weather, or bad weather, or snow on the car, there must be a great difference in the weight of the car?

Mr. COBB. We have no great fault to find with this, have we, Mr. Hickok?

Mr. HICKOK. No, sir.

Mr. COBB. They are under the charge of a careful man, recommended by the exchange, and we think he makes very proper allowance for all those facts.

Mr. DAVIS. You speak of the Erie Road. Are the other roads in the same way?

Mr. COBB. The Hudson River now, I believe, are building a track-scale, but have not had one heretofore. None of the other lines, I think, though, had track-scales excepting the Erie Road. Still they have a scale somewhere, where they weigh, I believe. The Central Road. I believe, has a scale at Buffalo that they sometimes weigh upon, but more frequently freight seems to have been levied without much regard to any certainty of weight but an estimated weight. Mr. Hickok, have the Baltimore and Ohio or Pennsylvania Central any track-scale?

Mr. HICKOK. They have a scale at some point in the interior. I think Derry, Penn., and they profess to weigh all their cars there.

Mr. COBB. That would be quite unsatisfactory, from the fact that there is a long railroad transportation from that point here, and wastage, &c. But the complaint we make against the roads, and we think with a good deal of justice, is that they should at least settle freight by the quantity delivered from the lighter, as the lighter is a part of their

transportation. In one case, where the deficiency was very glaring, and the lighter sustained some damage by wet, they did settle with the delivery-store on lighter; but usually they have said that the track-scale must go. Consequently there may be a difference, and a very considerable difference, between the delivery by lighter and the track-scale weight on which they collect their freight and settle for overcharges or excessive weight.

I have a suggestion which I may hope to see that some of the roads at least are beginning to appreciate the importance of, in regard to increasing the facilities of the roads, and, as I began to remark before, I think it would not be practicable for the roads to guarantee the quantity, from the difficulty of ascertaining weights at the small interior stations, from the expense of locating scales, but it would obviate it to a great extent if something like this were done: We think each grain-carrying road should erect at their termini here elevators of such capacity as would contain the deliveries of such roads for, say, one week. Large lots should be kept identical; small lots, under charge of an inspector, should be bulked. All grain should be handled by such elevators and held free, subject to order of consignee, for a reasonable time; after which, should be subject to a reasonable charge. It is supposed that such elevator, storage, and delivery, as a part of their carrying system, but not as a means or pretense for levying new exactions upon this traffic, would be economy, through giving quick dispatch to rolling-stock, and determining the proper quantity on which to charge freight; and lighterage to vessels, where necessary, would be much less on aggregate than on small parcels preserving identity, as now done; and not unfrequently ships would take their entire load from such stores, thus saving lighterage altogether.

The Pennsylvania Central, I understand, have already come to the conclusion that such an elevator is a necessity for their road, not as a new exaction upon traffic, but as a convenience for dispatching the cars of the road. I have had stuff—I presume I have it now—but I have had stuff that has lain four weeks and it was impossible either to get at them or that they should bring the cars up to their lighters; meanwhile the market may suffer very severe fluctuations, and some delays are almost inevitable. The Erie Road is, we think, the best of all, from the fact that they have a very large dock capacity, can load several lighters at once, and have generally given very good dispatch. But we think any of them would promote their interest very much by having an elevator, and at once on the receipt of a train of cars, commence unloading.

The Produce Exchange would provide a proper inspection that they would be satisfied with for bulking small lots of one, two, three, four, or five cars, while the large lots of 20,000 or 30,000 bushels, which are often bought under contract, would be kept entire, and no great injustice would be done compared to the great convenience that would ensue from it by bulking small parcels as they do at Chicago and Milwaukee. At present the identity of all grain is preserved or supposed to be.

The CHAIRMAN. What is the total cost from railroad to ocean vessel, where the cargo is sent to the shipper's vessel and does not go through your elevators at all?

Mr. COBB. It goes through the floating elevators necessarily.

The CHAIRMAN. Then what is the total charge?

Mr. COBB. A cent and a half, precisely as it is any other way. That is by railroad.

Mr. NORWOOD. What you call elevating in that instance is lightering?

Mr. COBB. No, sir; elevating is the act of unloading the lighter by a mechanism contrived for it.

Mr. NORWOOD. Putting it into the ship?

Mr. COBB. Dropping a machine into the hold of the ship with buckets, and setting it in motion and lifting it up and dumping into a hopper and weighing, and thence on. They are independent boats of themselves. They have no storage. They carry nothing but simply their own machinery and engines for doing this lifting work. The lighter is a common canal-boat or barge, or anything of the kind that can safely receive and carry property.

Mr. NORWOOD. I understand you to say that in transferring either from a canal-boat or from a railroad-car to an ocean-vessel, the charge is $2\frac{1}{2}$ cents, but in the one case the canal-boat pays $\frac{3}{4}$ cent?

Mr. COBB. Yes, sir; that is her own unloading.

The CHAIRMAN. Is there any difference in the value of the wheat brought here by canals and railroads? Is the condition such as to make any difference in the value?

Mr. COBB. There are times when, for instance, during the heating season of corn, perhaps rail corn comes here in slightly better condition than it would by canal, from the fact that it has received more recent ventilation, but the period is a very short one.

The CHAIRMAN. You do not regard that as an important item?

Mr. COBB. We do; rather important for the time being, but the period is short.

Mr. DAVIS. What is that time?

Mr. COBB. During the germinating season of corn, when the corn is still soft to some extent.

The CHAIRMAN. What season is that?

Mr. COBB. May and June; early in the fall, too, if the new crop is forced out before it is cured. It may come in tolerable condition by rail when it would not come in any suitable condition to be merchantable by any other method.

The CHAIRMAN. Both starting from Chicago, for instance, in good condition, it would probably arrive in about as good condition here coming by rail or water, if the condition was good when it started?

Mr. COBB. Yes, sir.

The CHAIRMAN. Is there any difference in weight?

Mr. COBB. No, sir; I should not say there was, because it is generally cured and dried before it is marketed.

C. R. HICKOK. Mr. Chairman, most of the points have been gone over by Mr. Cobb, and perhaps it is not worth while to take up the time of the committee in rehearsing them. I will, however, submit a few remarks.

There is an utter lack of facilities on the part of the railroads bringing grain to this port for handling it with economy and dispatch. By the present plan the cars are run upon a dock or pier, and a canal-boat or lighter brought alongside, into which the grain is shoveled from the cars. Much of it is shipped in small lots of from one to five cars each, and as each shipment must be kept separate in order to ascertain the quantity, it frequently happens that six or eight single cars of grain, belonging to different parties, are put into one boat. These may be required to be delivered at as many different places, involving the use of the boat for several days, and the expense of towing in each case. The cost of lightering a single car of grain is about 3 cents per

bushel, while the usual charge for a boat load is $1\frac{1}{2}$ cents per bushel. If a shipment of five or more cars is made from some western point in one lot, the cars generally become separated on the way and arrive at different times; it then is necessary to either lighter them separate or let the cars remain unloaded on the track until the lot is complete, and this frequently requires from five to fifteen days. To remedy this matter, elevators should be built at the terminal points of the railroads on the water, with storage capacity in proportion to the business of the road. Each car of grain should be inspected, graded, and weighed on arrival, and a receipt given to the consignee for the quantity and grade. This refers more particularly to the small lots, of which the larger proportion of the business is made up. These receipts would be bought and sold on the market in the same manner as at the western cities. The advantage of this plan to the railroad companies would be, first, in avoiding delay in unloading the cars; and, second, the cost of lighterage, which is now paid by the railroads and included in the freight, would be largely reduced. In many cases lighterage could be dispensed with entirely, as vessels could load directly from the elevators. The expense of building these elevators and running them should be placed where it properly belongs, on the railroad companies, and for this outlay they would be amply compensated by the increase it would add to their capacity for doing the business and the greater economy with which it could be done.

There is no lack of storage-room for grain in the port of New York, but the warehouses now in use are not accessible to the railroads and cannot be reached by them. The manner of handling grain in use here would not be tolerated for a moment in any western city, and New York is the only eastern city where grain is exported that is not already provided with elevators.

Mr. DAVIS. Did I understand you to say that the usual time to put grain from a car to a vessel, if it was going to be shipped to a foreign market, was from five to fifteen days?

Mr. HICKOK. No, sir; there is often that much delay in accumulating a lot of grain. For instance, a party in Iowa ships ten cars of wheat here; perhaps two cars may arrive, the lot all starting together, but getting broken up on the way. To-morrow there would be another one. The next day some more, and it may be ten days before the whole shipment of ten cars is here. Now, these cars that arrive first have either got to be lightered separately, at an increased cost, or the grain must remain in the cars until the whole shipment arrives.

Mr. DAVIS. What is the average time from the arrival of a car of grain here until it gets to its destination, let that be in warehouse or in a vessel? I mean taking a single lot that arrives to-day.

Mr. HICKOK. It could be transferred from a car to a boat and from a boat into a ship all in one day; but these delays are incidental to the manner of doing the business. The cars get scattered on the way, and a single lot does not arrive here at once.

Mr. DAVIS. I understand that part of it. Do I understand you, then, it is usually done the same day?

Mr. HICKOK. No, sir.

Mr. DAVIS. What do I understand you, then?

Mr. HICKOK. It usually takes from two to three days to transfer a lot.

Mr. DAVIS. How does that compare with the boats?

Mr. HICKOK. It is a longer time than is required by the boats. A

canal-boat coming here with a load of grain can be sent to any vessel in the harbor and be discharged the same or the next day.

The CHAIRMAN. They discharge, of course, direct from the canal-boat to the ocean-vessel?

Mr. HICKOK. Yes, sir.

The CHAIRMAN. What is the objection to the inspection system that is adopted in the western cities?

Mr. HICKOK. I see no objection to it.

The CHAIRMAN. Why have they not adopted it here?

Mr. HICKOK. Because the grain heretofore has largely come by canal-boats which contain seven to eight thousand bushels. There is no object in inspecting that grain, because so large a lot can as well be kept separate as to be mixed with something else, and the shipper of grain at the West would rather have his own grain kept separate for that reason.

Mr. NORWOOD. It is only inspected, then, as I understand you, for the purpose of mingling it?

Mr. HICKOK. Yes, sir.

Mr. NORWOOD. That they may have the same grade; the same quality?

Mr. HICKOK. Yes, sir.

GEORGE O. JONES examined:

The CHAIRMAN. The committee would like to ask you some questions in reference to certain statements in your pamphlet in regard to the proportions of watered stock on some of these lines. I see you have made a statement very minutely as to the amount, but we would be glad to have the sources of information upon which you make that statement if you can give them to us now. For instance, you say "the obligations outstanding against the New York Central and Hudson River Company now amount to \$105,000,000, or more than four times the actual cost of its property, to its stock and bondholders." Can you state the sources from which you obtained that information?

Mr. JONES. The New York Central Railroad, as I stated in that pamphlet, was organized out of a number of roads built mostly by the people along their line reaching between these different cities located between Albany and Buffalo. The roads entering into the consolidation were the Albany and Schenectady, with a capital of \$1,000,000, with a capital stock claimed to have been paid in of \$1,064,000, and with a funded debt of \$685,000; the Schenectady and Troy Road, with a capital of \$650,000 claimed to have been paid in, with a funded debt of \$90,000; the Utica and Schenectady Road, with a capital stock of \$4,500,000, the capital stock claimed to have been paid in of \$4,124,000; no funded debt; the Syracuse and Utica Road, with a capital of \$2,400,000, amount claimed to have been paid in \$2,400,000, funded debt \$126,000; the Rochester and Syracuse Road, with a capital of \$5,549,000; capital claimed to have been paid in \$5,132,000, funded debt \$700,000; the Buffalo and Lockport Road, with a capital of \$600,000, capital claimed to have been paid in \$200,000; no funded debt; the Mohawk Valley Road, with a capital of \$2,000,000; not claimed that any portion of that money had been paid into the treasury; no funded debt; the Syracuse and Utica direct, \$600,000, with no claim that any portion of that had been paid into the treasury; the Buffalo and Rochester a capital of \$1,825,000, sum claimed to have been paid in \$1,825,000, with a funded debt of \$184,000; the Rochester, Lockport and Niagara Falls, with a capital of

\$1,675,000, claimed to have been paid in \$1,446,000, with a funded debt of \$711,000. By these figures it will be seen that the capital stock of the different companies coming into the consolidation amounted to \$20,799,800. The amount claimed to have been paid in was \$16,852,870; the funded debt, \$2,497,526.10. I did not add the fractions in announcing the capital and the funded debt, but the aggregate shows the indebtedness or obligations of the companies at the time of the consolidation.

The CHAIRMAN. Before you leave that point, where did you get those statements?

Mr. JONES. These are taken from the reports of the companies of their capital at the time of the consolidation, from the State engineers, and the office of the secretary of state both.

Mr. DAVIS. Do you recollect the year?

Mr. JONES. This is for the year 1853, as I say, at the time of the consolidation. This represents the different companies which were consolidated into the New York Central Railroad Company, reaching between Albany and Buffalo only, before the consolidation of the New York Central with the Hudson River, filed with the secretary of state July 7, 1853.

Now, that these sums are largely in excess of the amount actually paid by the stock and bond holders, I will illustrate by instancing the Utica and Schenectady, which is entered here with a capital of \$4,500,000 at the time of the consolidation.

Mr. NORWOOD. Do you mean that it was put into the consolidation at that value?

Mr. JONES. Yes, sir; that was the amount. Now, the facts in relation to that road are simply these: That up and until the time of the consolidation there never had been any stock issued; there never had been any bonds issued; that the capital stock originally was \$2,000,000; that the amount paid by the stock and bond holders for building the road—that is the grading, purchasing real estate, erection of the buildings, and the equipment of the road—was \$1,500,000.

Mr. NORWOOD. Pardon me right there. You say by the stockholders and the bondholders.

Mr. JONES. By the stockholders, I should say. There never were any bondholders.

Mr. NORWOOD. You have just stated before that no bonds have been issued.

Mr. JONES. Yes, sir; \$1,500,000 was all that was ever levied on and paid by the stockholders for the construction and equipment of that road until it was put in operation. From the hour it was put in operation it earned in excess of the amount that was required to pay its operating expenses and keep up its ordinary repairs—and the limit to which they were restricted at that time was 10 per cent. of the actual money invested—a large excess beyond the requirements to meet and pay these demands. This excess was used partially on the road in making additional improvements and increasing its facilities, and was charged up to construction with a view ultimately, if possible, of capitalizing it. At that time they were in great doubt as to their ability to accomplish that result.

Mr. DAVIS. For the want of legislation?

Mr. JONES. Yes, sir. They were then a separate company. It was charged up and stood to construction account.

Mr. NORWOOD. What did you mean by "result?" You said there was doubt about accomplishing that result.

Mr. JONES. About the legislature consenting or allowing it to be capitalized. Do I make myself understood?

Mr. NORWOOD. Yes, sir; perfectly.

Mr. JONES. They did, however, accumulate \$500,000 in money outside of these payments made for additional improvements, and which was charged to construction account.

The CHAIRMAN. Was that in addition to dividends?

Mr. JONES. In addition to the 10 per cent. dividend. That \$500,000 was divided among their stockholders by giving them the additional \$500,000 stock, calling it paid-up stock, making the entire \$2,000,000 of capital to which the road was entitled under its charter.

Mr. NORWOOD. Have you stated how long they were in acquiring this amount of money? That was up to 1853. How long had the road been running?

Mr. JONES. The road had been running from 1845, had it not, Senator Conkling?

Mr. CONKLING. Earlier.

Mr. JONES. Eighteen hundred and forty-three, I believe.

Mr. NORWOOD. About ten years.

Mr. JONES. Yes, sir; I have the details, but I have not got them at hand, in relation to the earnings of these roads and their capital, &c., at various periods from the time they obtained their charters up to the time of the consolidation.

Mr. NORWOOD. You say in those ten years they paid the running expenses and construction account or the improvement account?

Mr. JONES. The ordinary improvement account.

Mr. NORWOOD. And 10 per cent. dividend?

Mr. JONES. Yes, sir; on the million and a half.

Mr. NORWOOD. And accumulated \$500,000?

Mr. JONES. Yes, sir; and more than that, because the sum of \$1,500,000 is represented by what is charged to construction account out of the surplus earnings of the road.

The CHAIRMAN. That Utica and Schenectady Road is seventy-eight miles long, is it not?

Mr. JONES. Yes, sir.

Now the committee will see that if that proportion of the New York Central Road, about one-quarter of it, cost only one million and a half dollars to its stockholders, and that was the best road that entered into the consolidation, the best equipped—it was the heaviest, had the heaviest grading and rock-cutting of any other portion of the road between Albany and Buffalo, and undoubtedly cost more in proportion per mile to build than any other of the different roads that entered into the consolidation—if that road cost only \$1,500,000, it is fair to estimate that the entire road never cost over \$6,000,000. It is fair to estimate that their proportion of stock, as entered into the consolidation, was as much in excess of the amount actually paid by their stock or bond holders as that of the Utica and Schenectady Road.

The CHAIRMAN. Does that cost, as you estimate it, include their rolling-stock at that time?

Mr. JONES. Everything. From the time that the road was put in operation, at a cost of a million and a half of dollars, up until to-day, there never has been a dollar levied on the stockholders of that company, nor the stock and bond holders representing the New York Central Company, in excess of that amount, to represent the vast capital that that road now represents.

The CHAIRMAN. Has not there been a levy made on any of them?

Mr. JONES. There was on none of them. They have paid regular dividends on the stock from the time of the consolidation, and interest on their bonds from that day to this.

The CHAIRMAN. How have these vast improvements been made?

Mr. JONES. Out of the surplus earnings of the road, with the single exception of the Athens branch, running between Schenectady and Athens, which is said to have cost \$2,000,000, and which was put into the company at that price, and its stock issued to represent it.

Mr. DAVIS. Are their general improvements made from the earnings of the road, or from an increased bonded debt?

Mr. JONES. From the surplus earnings of the road; that is, the earnings beyond—

Mr. DAVIS. I understand what surplus is. Now, has there been no increase of their bonded debt for the vast improvements going on?

Mr. JONES. At that time there were consolidation certificates in addition to this stock.

To go back a moment now, however, to those figures. The capital stock as represented by these roads at the time of the consolidation, was \$20,799,800. The amount claimed to have been paid in was \$16,852,870, and the funded debt \$2,499,526. Now, it will be found on examining these figures that the Mohawk Valley Road was put in at \$2,000,000, and Senator Conkling and every intelligent man of middle age in the State of New York knows that that did not represent one dollar. There never had been a spade put in that road, and there never has been yet.

The CHAIRMAN. Is it a paper road?

Mr. JONES. A paper road.

Mr. NORWOOD. No such road in existence?

Mr. JONES. There was a survey made, but there never was a spade put into the road, and there has not been to this day. The Syracuse and Utica direct was put in at \$600,000. There never had been a spade put in that road at that time.

The CHAIRMAN. That has since been built?

Mr. JONES. Yes, sir.

Mr. CONKLING. The Syracuse and Utica direct, do you say?

Mr. JONES. Yes, sir.

Mr. CONKLING. It has never been built.

Mr. JONES. No, no; I am mistaken. It never has been built. The Schenectady and Troy Road, \$650,000. No one can tell anything about what its value was. It is known that it was bought for less than \$100,000 within two months before the consolidation. It was put in \$650,000 stock and \$90,000 bonds. So that I think these figures and statements will bear out the assertion made in that pamphlet that the entire cost of the road, with the entire cost of the Hudson River Road, as claimed in 1853, when it was open over its lines, and when its stock and bond holders were assessed to make payments—

Mr. SHERMAN. You speak now of the Hudson River?

Mr. JONES. Yes, sir; it did not exceed in all \$25,000,000. In other words, that the New York Central and Hudson River Railroad, from the city of New York to the city of Buffalo, with all its property, never cost its stock and bond holders \$25,000,000.

Mr. SHERMAN. You mean at that time?

Mr. JONES. At any time; for since that time the only levy that has been made on the property-owners for improving this property was made in 1864, when the stock of the Hudson River Company was issued to the extent of \$2,000,000, and 50 per cent. was called up. The other

50 per cent. was given to the stockholders to represent the deficiency of dividends for the years gone by, for which they had received no dividends.

Mr. SHERMAN. Has there not been a large amount of bonded indebtedness created since that time?

Mr. JONES. At the time of the consolidation they established the capital stock of these roads at \$23,000,000.

Mr. SHERMAN. Do you mean to include the Hudson River?

Mr. JONES. No, sir; the New York Central. I will include the other in a moment. Capital paid in, \$22,000,000; funded debt, \$11,000,000. You see how the funded debt has jumped from \$2,000,000 to \$11,000,000. Entire cost of road \$22,000,000, and yet here is \$23,000,000 of stock, and \$11,000,000 of bonds. Those bonds, or their consolidated certificates, were made a present to the different holders of stock and bonds in these different towns, for which it was never pretended, then or since, that one dollar was paid.

They issued \$8,000,000 of consolidation certificates in addition to the watered stock, which brought up the capital and bonded indebtedness of the company to about \$34,000,000.

Mr. SHERMAN. Do you know what was done with the money received on these bonds? Was not that used in improving the road?

Mr. JONES. There was no money paid for them. They were given away and paid for again out of the earnings of the road, and have all been redeemed out of the earnings of the road since. There was nothing paid for them, but yet the commerce and travel over the road was taxed to pay a sufficient return to redeem them.

Mr. SHERMAN. Do you know what they did with them; they were given away, you say; they were not ostensibly given away at that time, were they?

Mr. JONES. Yes, sir; under a resolution of the board of directors and the action of the road, they were given these \$8,000,000 of certificates, for which there was no pretense whatever.

Mr. SHERMAN. I refer to the bonds.

Mr. JONES. I say the original bonds after making the articles of agreement establishing the capital at \$23,000,000, and in addition they issued \$8,000,000 consolidation certificates, which took the form of bonds bearing 6 per cent. interest, and divided this up among the stockholders of the new company. It is notorious in the history of this State, and was the occasion of much remark at that time and has been ever since.

Mr. DAVIS. What was the alleged cause at that time; what excuse was there to ask the legislature to allow them to issue?

Mr. JONES. There was no particular excuse offered for it at that time. It was said that the property was worth that amount; but there was no satisfactory reason ever given to the people of the State.

Mr. NORWOOD. Were they issued in the nature of stock?

Mr. JONES. Stock certificates, bearing 6 per cent. interest.

Mr. NORWOOD. You spoke of them as bonds awhile ago?

Mr. JONES. They are called a funded debt or bond. It entered into the funded indebtedness of the road and increased it immediately from inside of \$3,000,000 to \$11,000,000 and something. They were a present to the stockholders of the road; \$8,000,000 of bonds were issued, as I said before, and afterward paid out of the surplus earnings.

Mr. DAVIS. And retired?

Mr. JONES. And retired. I believe there are none of them in existence now.

The CHAIRMAN. Then they are not included now in the \$105,000,000?

Mr. JONES. No, sir; they have been paid.

Mr. CONKLING. O, yes; they are included in the \$105,000,000.

We go on, then, and in 1854 the capital was \$23,000,000 as established, and the funded debt \$11,000,000. Cost of the road, \$25,000,000; it runs on \$25,000,000, \$28,000,000, \$29,000,000, \$30,000,000, \$30,000,000, \$31,000,000, &c., until 1867, when it reaches \$36,000,000; the cost of the road and the capital stock has grown to \$28,780,000. The Hudson River Railroad Company was organized March 1, 1847, with a capital in 1851 of \$4,000,000, and capital claimed to have been paid in, \$3,703,000; the funded debt, \$5,640,000. In 1853 its capital was still \$4,000,000; amount claimed to have been paid in, \$3,727,000; funded debt, \$7,000,000. The road claimed to cost \$7,780,000. Up until 1862 the entire cost of the Hudson River Road was \$12,113,000; the funded debt \$9,000,000, and a capital of \$3,000,000.

The CHAIRMAN. That is by the statement made by the roads themselves to the State auditor?

Mr. JONES. Yes, sir.

Mr. DAVIS. I take it, you take all these statements from the reports made to the auditor of the State?

Mr. JONES. Yes, sir; these are all official reports. Since 1853, as I stated, the stock and bond holders of the road never have been assessed but \$1,000,000, and consequently the cost of the road to the stock and bond holders has not grown except to the extent of \$1,000,000.

The CHAIRMAN. Was that assessed?

Mr. JONES. Yes, sir, and stock issued to double the amount.

The CHAIRMAN. Has there not been some increase of the bonded indebtedness of that road?

Mr. JONES. The bonded indebtedness varied different years. There was some issued one year and paid the next from their earnings. As they increased they paid and diminished their bonded indebtedness and their floating indebtedness. For instance, its bonded indebtedness was, in 1853, \$8,000,000; in 1859, \$8,800,000, and in 1862 it was \$9,132,000; in 1864 it was reduced, and its capital was increased—its stock was increased.

The CHAIRMAN. What was its bonded indebtedness at the time of the consolidation of the Hudson River in 1869?

Mr. JONES. Four million three hundred and nine thousand dollars, and the capital stock had grown to \$16,020,000.

Mr. DAVIS. Did you state what it was put into the consolidation at?

Mr. JONES. I will, in a moment. The New York Central and Hudson River Railroads were consolidated under chapter 917 of the laws of 1869, with a capital stock of \$45,000,000, which you see it had grown to. The capital stock of the two companies had grown to, at that time, in the one instance, \$16,020,000 in the case of the Hudson River, and in the case of the New York Central to \$28,780,000. At that time the company issued stock certificates, in addition to the capital, amounting to \$44,428,330.

The CHAIRMAN. Was that 80 per cent.?

Mr. JONES. Yes, sir, over 80 per cent. of the stock; that is, 80 per cent. of the funded stock and funded indebtedness, which was \$13,631,000. It gives 80 per cent. on the entire capital. That brings the total obligations outstanding against the road up to \$103,110,137.31.

Mr. DAVIS. At this date?

Mr. JONES. Up to 1869.

Mr. CONKLING. What did that 80 per cent. of certificates represent?

Mr. JONES. The resolution, if I recollect, read something like this:

"*Resolved*, That the New York Central Railroad Company have expended out of their surplus earnings an amount equal to 80 per cent. of its capital, and that the stockholders are entitled to some dividend on such expenditure: Therefore,

"*Resolved*, That certificates be issued to represent the sum so paid."

Mr. DAVIS. Did they require legislation for that?

Mr. JONES. Yes, sir; it was afterward confirmed by the legislature. In other words, it does, Mr. Chairman and gentlemen of the committee, just what I should claim a railroad company has no right to do—capitalize its surplus earnings; that is, the sums paid by the public, for the use of a public highway, in excess of the legitimate demands required to pay its necessary operating expenses, keep it in repair, and a fair return on moneys actually invested for the public welfare. In other words, that you cannot make a public use a public highway, such as a railroad has grown to be in this country, the common highway of the country, over which all the commerce and all the travel of the country is transacted, a matter of private speculation without destroying the general prosperity of the people, without undermining it, destroying it, and, to sum it up, as you would undoubtedly call it as a lawyer and a Senator, being against public policy.

To illustrate: If the obligations outstanding against the New York Central and Hudson River Railroad Company were restricted to the amount actually paid by their stock and bond holders, say \$25,000,000 at the outside, the commerce of this city, its business and the industries of the people living along the line of that road, would not be taxed over \$2,500,000 each year to pay dividends of 10 per cent. on its capital. But by incorporating their surplus earnings into its capital they have increased it to the sum, as you see here, of \$105,500,000, and it requires \$6,000,000 each year to be added to the burden on the necessities of life of the people and their travel to meet and pay these dividends. It is to that point that I desire particularly to call the attention of the committee, as being one that is fundamental in its character, and laying away back of all the details in relation to this question that you have under consideration.

I merely desire to call the attention of the committee for one moment to the increased earnings of these roads, because we all remember when railroads were new things in this country, people never dreamed of using them to any considerable extent. They were the exception and not the rule; not in general use as our common public highways, which they have grown to be. I wish to be understood that they were exceptional as highways, and they were not in general use. We used canals, plank-roads, and turnpikes. I would say, however, that I desire to impress upon the committee that our system of highways since the introduction of railroads has undergone an entire change in its character; that, owing to the superior advantages of railroads over other highways, they have practically superseded them as agents of commerce and travel, and have come to be almost universally adopted by the people. To prove this, I will right here call the attention of the committee to some figures which I prepared a few days ago, showing the proportion of tax on commerce over the canals and that over railroads:

From the comptroller's report for 1873.

Amount paid for tolls on the canals of this State for the year 1872	\$3,060,328 89
Amount paid to boatmen for moving property over the canals for the year 1872	6,000,000 00
Total tax on commerce moved over the canals for the year 1872 . .	9,060,328 89

From the State engineer and surveyor's report, 1873.

Amount paid for transporting passengers over the railroads of this State during the year 1872.....	\$24, 472, 869 12
Amount for freight	62, 384, 202 20
Amount for other uses, mostly for moving property	6, 211, 108 55

Total tax on commerce and travel for the use of the railroads of this State for 1872.....	93, 032, 179 57
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From the auditor of canals' report for 1873.

Number of tons moved over all the canals of the State during the year 1872.....	6, 673, 370
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From State engineer's report.

Number of tons moved over the railroads of this State during the year 1872.....	27, 427, 415
Difference in favor of railroads.....	20, 754, 045

In olden times, or up until within two years, it has been estimated that the amount paid boatmen for moving property, about equaled the sum paid the State for tolls, but under the reduced toll-sheet, the boatmen undoubtedly receive more than the State receives for tolls, so I have estimated it at twice the amount and called the amount paid to boatmen \$6,000,000. We find that the tax on commerce, or on property moved over the canals during that year, was \$9,060,328.09.

The CHAIRMAN. The \$3,060,000 is, then, actual, and the \$6,000,000 estimated?

Mr. JONES. Yes, sir. By these figures it will be observed that the people have adopted railroads as the agency they will employ for moving their property and persons to the extent of ten times the amount in money paid for the use of canals.

Mr. DAVIS. It would be interesting to me if you could tell me the number of tons moved per mile, one mile, compared with what this \$62,000,000 represents on railroads and what the \$9,000,000 represents on canals.

Mr. JONES. Different reports from these people, which you can get, will furnish you with all the details in relation to that question, or I should be pleased to furnish them myself.

Now, Mr. Chairman, in relation to the earnings of these roads, dividends, &c. The gross earnings of the New York Central Railroad in 1854 were \$5,000,000; transportation expenses, \$3,088,000; net earnings, \$2,830,000; interest paid, \$656,000; amount paid by dividends, \$1,125,000. In 1855 the gross earnings were \$6,500,000; transportation expenses, \$3,400,000; net earnings, \$3,160,000; interest paid, \$839,000, and dividends, \$2,875,000.

So it runs along until 1863, when the earnings sprang up to \$10,000,000. In 1864, \$12,000,000; 1865, \$13,000,000; 1866, \$14,000,000; 1867, \$13,000,000; 1868, \$14,000,000; 1869, \$15,000,000, with the interest amounting in 1869 to \$894,000. The committee will bear in mind that there has been no additional assessments on the stock and bond holders all this time, and the dividend amounting to \$4,300,000. The same ratio holds good in relation to earnings and dividends on the Hudson River Road. I am speaking of before the consolidation. In 1852 the earnings were \$1,063,000; in 1869, \$6,484,000. The interest paid in 1864 was \$350,000, and dividends, \$1,259,000. Those roads were consolidated, as

I before stated, with a capital of \$45,000,000, and consolidation certificates of \$44,428,330 were issued, being 80 per cent. on the entire capital of the property, bringing its indebtedness or outstanding obligations at that time to \$103,110,107.31. In 1870 the gross earnings were \$22,201,521.43; transportation expenses, \$14,068,079.31; net earnings, \$8,133,442.12. In 1871 the earnings were \$21,000,000; expenses, \$13,000,000; net earnings, \$8,500,000; amount of interest paid, \$721,000; amount of dividends paid, \$7,258,741.70, or more than the entire gross earnings of both roads—the New York Central and the Hudson River—during the year 1853.

Mr. DAVIS. Do I understand that the dividends paid stockholders in a single year were greater than the gross earnings of the road?

Mr. JONES. Not for that year, but for 1854, since when the stock and bond holders have never paid any sums, except \$1,000,000, for the improvement of their property. Practically, they have paid nothing. There has been no issue of bonds since that time, except those to represent the surplus earnings of the road—the watered stock.

Mr. NORWOOD. No bonds issued for construction or improvement?

Mr. JONES. None that have entered into the account that have not been redeemed, because the bonded indebtedness is now no greater than it was at that time.

Mr. DAVIS. And those that have been redeemed have been redeemed from the earnings of the road, I understand.

Mr. JONES. They have been redeemed out of the surplus earnings of the road; yes, sir.

The CHAIRMAN. Have you the statistics with reference to the Lake Shore Road?

Mr. JONES. Not in detail; they are stated generally, here. The different branches consolidated into the Lake Shore and Michigan Southern Road, represent very different returns on the original capital. For instance, you take any of the branches east of Cleveland—there was the Buffalo and State Line, and the Erie and the State Line, and the State Line, and the Erie and Ashtabula, and the Ashtabula and Cleveland—for every thousand dollars invested in the original stock of any of these companies, there are now outstanding from \$7,000 to \$10,000 of obligations, on which the commerce and travel of the country is taxed to pay dividends.

The CHAIRMAN. What did you take that from; their reports?

Mr. JONES. Yes, sir; some of the western branches ran for many years without paying dividends at all. The old Kalamazoo Road and others cost very little, and went a great many years without paying dividends. But it is safe to assert that the road never cost the stock and bond holders \$25,000,000, and it now represents a capital of \$80,000,000. To show the influence of this question, admitting the capital stock of railroad companies to increase as population and traffic and business along their lines increase, instead of reducing their rates, which I hold they should do in order that the public may derive advantages from the construction of railroads, I will state that in order to pay dividends on the actual cost of the New York Central Railroad during the next eighteen years, would amount to a sum about equal to \$36,000,000. To pay dividends at the rate of 8 per cent. on its present capital, it will impose a burden on the commerce and travel of the country, and the people living along the line of the road, amounting to \$144,000,000. In this pamphlet, if you have looked it over, you will see that I argue that that is one of the reasons why trade is being diverted from this city to Baltimore, Philadelphia, Montreal, and Boston, and is because the roads

reaching those cities represent nearer their cost, and property reaching them avoids the tax of paying dividends upon that vast amount of fictitious or watered capital.

Mr. NORWOOD. At that point can you state what is the relative rate of freight that they charge, compared with these roads?

Mr. JONES. To illustrate. I reside in Albany. When the river closes in the winter, the local rates of freight are immediately advanced over the New York Central Road, and along the line between here and Albany, so that the average rate from New York to Albany is 55 cents per hundred. The distance is one hundred and forty-four miles over a perfectly level road, and a road easier and cheaper operated than almost any in the country.

Mr. DAVIS. What class of goods do you speak of?

Mr. JONES. Ordinary merchandise—fourth class. The same class of goods is brought from Boston to Albany at 40 cents per hundred.

Mr. DAVIS. How many miles?

Mr. JONES. Two hundred miles, over a road of heavy grades, and an expensive road to operate.

Mr. DAVIS. You spoke of what the freight was when the river closed; what is it when the river is open; now, for instance?

Mr. JONES. Anywhere from 12 to 25 cents.

In answer further to your question, Mr. Norwood, it is notorious that property is transported from Baltimore throughout the entire West, as far as the Baltimore and Ohio Road with its branches extends, at rates very much less than those usually charged from the city of New York, averaging from 15 to 25 cents per hundred to the West. Grain is shipped from Milwaukee or Chicago to Baltimore, on an average of three to six cents per bushel less than when brought to this city by rail. The result of that is that the Baltimore and Ohio Road has all the property it can possibly handle, and Baltimore derives the advantages. Its merchants derive the advantages of handling that property which, we hold, otherwise would reach New York.

Mr. DAVIS. How is it with the Pennsylvania Road?

Mr. JONES. The same holds good in relation to the Pennsylvania road, and the reason of it is that Mr. Garrett, the president of the Baltimore and Ohio Railroad Company, never has permitted the capital stock of the Baltimore and Ohio road to be increased beyond the amount expended on it by its stock and bond holders. In other words, the capital stock of the Baltimore and Ohio road has never been watered, but its surplus earnings have been expended in improving its facilities for moving and handling property.

The CHAIRMAN. Have they added to their capital stock?

Mr. JONES. No, sir; the number of engines on the Baltimore and Ohio Railroad has doubled within the last five years. The number of freight-cars has more than doubled. Running around the piers and wharves of Baltimore, there are, it is asserted, as many as seventy-five miles of railroad-track; so that the Baltimore and Ohio road going into Baltimore runs its cars directly alongside of the vessels, property is transferred from the car directly into the vessel, the car is put on to another track, receives its return freight, and is moved off at once.

The money that has been paid out on the New York Central, for instance, to pay dividends on its watered obligations, in that case has been expended on improving its facilities, whereby the public have been benefited at a reduction of expense of from three to six cents per bushel on the moving and handling of grain between the West and its ultimate destination, Liverpool.

Mr. DAVIS. Does the same hold good with western freight, such as coffee, sugar, &c.?

Mr. JONES. There was a great deal said about it. It was only one of those things, however, which is used to blind the public and stifle an investigation of this question; the charge that the coffee-trade was entirely diverted from the city of New York in consequence of the port-charges. There was great annoyance,*there is no doubt about it, under the system that prevailed here, but the real facts, the real cause for transferring the coffee-trade from New York to Baltimore was that a Baltimore merchant could ship his coffee to the West 25 cents a hundred cheaper than a New York merchant could. It has held good during the last five years.

Mr. DAVIS. I notice in your comparisons they are all on the New York Central. How do they hold good with the other roads coming in here, for instance, the Erie and the Pennsylvania Central? Does what you have said in regard to the New York Central hold good, as a rule, to the Erie and Pennsylvania, who have terminal lines here?

Mr. JONES. Here is a paragraph covering that matter, as far as possible, because since 1867 we have had no reports on this subject. It attracted a great deal of attention in 1867. The reports were made in relation to the disadvantages under which New York City was laboring, as compared with other cities, and, especially, in relation to this great artery, the New York Central road.

The increase of the total freight business on the Erie road between 1862 and 1867 was 57 per cent.; on the Pennsylvania Central, 59 per cent.; on the New York Central, 22 per cent.; on the Hudson River, 21 per cent.; and on the Harlem, $5\frac{1}{2}$ per cent. The increase of charges per ton per mile on the Erie Road during the same year was $5\frac{1}{2}$ per cent.; on the New York Central, 14 per cent.; on the Hudson River, 70 per cent.; on the Harlem, 94 per cent.; while the reduction on the Pennsylvania Central was $2\frac{1}{2}$ per cent. It does not give the Baltimore and Ohio, but the reduction on that road was still greater than that of the Pennsylvania.

You will see that the roads in this State increased their charges. Since that they have been diminished, but not in proportion to their increased income, nor their business, nor even to as low a point as they were in 1857. We have no later dates from which to base anything, because the railroad companies have made no reports covering that ground since 1867, when it elicited a great deal of discussion.

Mr. DAVIS. That does not quite cover all my question. I asked you whether your general remarks, particularly as to the watering of stocks, as it is termed, would hold good in relation to the other two roads terminating here. You have stated that they do not hold good as to the Baltimore and Ohio, but you have not stated whether or not they hold good as to the other through lines that terminate here.

Mr. JONES. In relation to the Erie Railroad Company, all I have to say is this, that it is a notorious fact that from the day the first train of cars ever ran over it until the present time, it has always been in the hands of a set of public plunderers, very few men directly interested in its management ever living along its lines, a foot-ball in Wall street and London, and managed and manipulated for the interest of those people, instead of the general commerce of the country and the people living tributary to it, so that you can make no comparison between the two roads. I hold that it makes no difference, as far as public interests are concerned, whether the obligations of a railroad company are increased and burdens imposed on the people to pay dividends on that

increase for the benefit of the stockholders, or whether a railroad is managed by a set of men who have no interest whatever, except in manipulating its property for their own personal advantage, whether they use it up in paying big salaries, dividing their contracts, favoritism in moving property, &c.

Mr. DAVIS. That is not quite the line. I only inquired, generally, as to whether what you said in reference to the New York Central as to its management, and as to its watered stock, would apply measurably to the other two roads.

Mr. JONES. I can name five men who have made more money out of handling the property and manipulating the stock of the Erie Railroad Company than it ever cost.

Mr. CONKLING. Who do you mean by that?

Mr. JONES. I mean that Mr. Daniel Drew, Mr. Jay Gould, Mr. James Fisk, jr., Mr. William M. Tweed, Mr. Sweeney, Mr. Lane, and a half-dozen other less conspicuous men, saying nothing of the Bishop Shimer, and other unmentionable names, have made more money in manipulating the stock and handling the property and stock of the Erie Railroad Company than the road ever cost, with all its appurtenances, and that it has been managed for their individual benefit without regard to public interest.

So that there can be no fair criterion established between the two roads. One has been managed literally for the interest of stockholders, under the management of Commodore Vanderbilt, increasing their capital as business along its line would pay on an increased capital, and in the other case the property has been managed exclusively for the interests of those who control it here in Wall street or London.

Mr. CONKLING. I understand you have spoken of three other lines. How about the Pennsylvania Central?

Mr. JONES. I am not prepared to speak in relation to it. I am not familiar with its details. I only know that it is one of the competing lines from this city for the business of the continent. But it usually, after competing a while, terminates in a combination with other roads, and the establishment of rates. Sometimes, I suppose, to promote public interest, but, generally, to plunder the people.

Mr. CONKLING. Are you familiar with the local rate of the roads; can you tell us how it compares with the through rate? Take the New York Central, if you are familiar with it at all; in general, how does it compare?

Mr. JONES. Do you mean through rates on freight or passengers?

Mr. CONKLING. On freight.

Mr. JONES. Through rates are generally the same to competing points. They are the same to Buffalo, Cleveland, Detroit, and Chicago.

Mr. CONKLING. Perhaps you did not understand my question. I said, how did the through rates compare with the local? Is there any complaint, in other words, upon the line of the road that their local rate is greater than the through rate, and that, therefore, the people along the line of the road are unjustly dealt with?

Mr. JONES. The complaint in this State is almost universal. Manufacturers having goods to ship to the West, from as far west as Syracuse, frequently ship their goods to the city of New York, and reship them right back three hundred miles through that city to Chicago, in order to reach a competing point. The rates on local freight at points along the line of either the Erie or the Central—and those are the two lines running through the State—are frequently double, two hundred miles from New York, to what they are between here and Chicago.

They are frequently double to a point thirty miles from a competing point what they are at that point thirty miles beyond, the line of the same road.

Mr. DAVIS. Can you give us any figures on any particular point; anything which you have in your mind specially in relation to this matter?

Mr. JONES. They have the rates published to all the different points. When it is brought to a competing point, it is frequently reduced at that point one-half what it may be to a station thirty, forty, or fifty miles this side of it, or a less distance over the road.

Mr. DAVIS. Then I understand from that that they charge, in many instances, for a less distance more than they charge for the greater distance?

Mr. JONES. It is the rule and not the exception, the greater distance, the end of the road, being a competing point.

Mr. DAVIS. What per cent. would be the rule; what would that charge be for a lesser distance over the greater? In other words, at competing points, I understand, it is less, and where there is no competing point the charges are greater without regard to the distance. Now, can you give us an idea of what per cent.?

Mr. JONES. It is not uniform; there is no uniformity to it, so that you cannot arrive at a conclusion as to any percentage. The published rates are uniform, but they vary as competition comes and goes.

Mr. DAVIS. What per cent. is the local rate, as a rule, over the rate to a competing point?

Mr. JONES. I think it is about 75 per cent. I have not the figures with me.

Mr. DAVIS. You think that applies to each of the through lines in the State?

Mr. JONES. O, yes, sir; it is not unfrequently the case. They were last week sending property over the Erie Road to a competing point, and, for instance, here are two stations, one twenty miles this side; they are sending it through to the farthest station, and then bringing it back by wagon-loads, twenty miles.

Mr. CONKLING. Where is that?

Mr. JONES. Up in Cattaraugus County, so a gentleman was telling me the other day.

Mr. DAVIS. I understood you that it was not unusual at all to ship it past the point you want it to the farther point, and then pay the local freight back to the point that you want your goods?

Mr. JONES. That holds good.

Mr. NORWOOD. If you could furnish the committee with any particular instance of a charge of that kind it would be gratifying to me, because I have understood every railroad-man who has been before us to state that, while their rates are lower from competing points, relatively, than they are to intermediate points, in no instance does the charge to an intermediate point exceed in actual amount that to a competing point or a point at a greater distance.

Mr. JONES. I hardly conceive how a man could have the face to make such a statement before the present intelligent committee. Were you not possibly mistaken in their language? I remember hearing the question asked of Mr. Worcester when he was before the committee, and he replied that they had not charged more for a less distance than a greater distance, except at competing points.

Mr. DAVIS. No; he did not make any exception.

Mr. JONES. I understood him to say so, because I know it is a notorious fact.

Mr. NORWOOD. Could you furnish us with the tariff rates as published by the road, which would show your statement to be correct? I mean, will their published rates show the fact that you state? To illustrate, will they show that the freight rate from here to Syracuse is greater than it is to Buffalo, taking Buffalo as a competing point?

Mr. JONES. No, sir; they will not.

Mr. CONKLING. Will they show that their freights are greater from here to Syracuse than they are from here to Manlius? I take that as being the last considerable point before you reach Syracuse.

Mr. JONES. Many of their published tariffs will have the competing points blank.

Mr. DAVIS. I have April 3d, said to be the last tariff rate of the New York Central. I notice that certain stations on the road are left blank, so that at competing points they charge what suits them, and on the others they have published rates.

Mr. JONES. Buffalo, for instance, and Rochester are left blank. Those are strictly competing points. Syracuse is not strictly a competing point, neither is Utica, to any considerable extent. You will observe that Buffalo is left blank, because, as they will inform you, that is governed by competition. I have known freight to be carried to Buffalo at 25 cents a hundred, when it cost 50 cents a hundred to Albany. Rochester and Buffalo are the only strictly competing points on the line of this road.

Mr. DAVIS. I notice another thing which perhaps you can explain. I do not know the distance, as the miles are not given, but here you have 40 cents a hundred at any place along up beyond Rochester. It is the same thing when you get to Buffalo. Now what is the difference in miles, the rates being the same?

Mr. JONES. Batavia is about thirty-eight miles this side of Buffalo, and the tariff rate is 38 cents. The summer rates are hardly a fair test for comparison, because during the summer this road has the Hudson River and Erie Canal in competition with it all the time. When the frosts come and the river and the canal are closed, then the railroad company becomes master of the situation, and establishes its own tariff in this State, and that is one point that I desire to make, for I do not know that the committee, except in considering this subject as a whole in relation to the public welfare, can reach it. In this State there is no properly or legally constituted authority standing between the people and the railroad company to protect the interests of the people in relation to the transportation of freights. In relation to the transportation of passengers, every road has an established legal rate; but in reference to the transportation of property there is no restriction whatever over any of the roads of the State. The railroads become the government, as it were, establishing its own price for transporting the property of the people.

Mr. DAVIS. Can you tell why the legislature regulates the transportation for passengers and not for freight?

Mr. JONES. There is no good reason for it. No good reason can be offered except the power and influence of railroad corporations over the legislature. A committee of the senate or assembly of New York, for instance, get together, and they undertake to discuss this question. Well, before they fully understand it, the hundred days have expired, or else the influence of the railroad companies has been of such a character as to induce them to believe that it is best to leave the whole question in the hands of the railroad corporations.

It is unnecessary, perhaps, to go into detail in relation to that matter,

but we understand pretty well that railroad companies run the legislature of this State—the people have not a great deal to say about it.

I would like to say, because I have been misrepresented, Mr. Senator, in one or two quarters in the public press, that I am not in favor of congressional interference in the details of the management of railroads within the States. I believe that it is a subject that should be regulated by the States under general laws adopted by Congress. I believe that our railroad system in this State should be governed by a board of railroad commissioners, who should be clothed with authority sufficient to protect the interests of the people against any unjust demands of railroad corporations or companies. I think that it would be proper in Congress to adopt some general laws for the regulation and control of railroads, they having become, I hold, the common highways of this country, and being nothing more nor less than improved highways that have been universally adopted by the people. When it comes to the detail of the management relating to them, it is a subject that, I think, belongs to and should be exercised by the different States.

NEW YORK CENTRAL.

Formed under the provisions of chap. 76, laws of 1853. Consolidation agreement entered into May 17, 1853; copy of same filed with secretary of state July 7, 1853; the following companies entering into the consolidation:

Name of road.	Capital stock.	Stock paid in.	Funded debt.	Floating debt.	Cost of road, &c.
Albany and Schenectady	\$1,000,000 00	\$1,064,700 00	\$685,300 00	-----	\$1,774,548 22
Schenectady and Troy	650,000 00	650,000 00	90,200 00	\$3,578 70	685,523 39
Utica and Schenectady	4,500,000 00	4,124,000 00	1,500,000 00	-----	4,093,273 11
Syracuse and Utica	2,400,000 00	2,400,000 00	126,000 00	-----	2,661,477 81
Rochester and Syracuse	5,549,800 00	5,132,990 00	700,123 10	60,000 00	*6,016,778 17
Buffalo and Lockport	600,000 00	210,000 00	-----	-----	†94,558 77
Mohawk Valley	2,000,000 00	-----	-----	-----	-----
Syracuse and Utica direct	600,000 00	-----	-----	-----	-----
Buffalo and Rochester	1,835,000 00	1,825,000 00	184,903 00	150,000 00	2,415,014 29
Rochester, Lockport and Niagara Falls	1,675,000 00	1,446,180 00	711,000 00	-----	†
Total	20,799,800 00	16,852,870 00	2,497,526 10	213,578 70	-----

* Includes \$1,042,421.76 for construction of Rochester and Syracuse direct road.

† Road not completed.

These figures are from the report of the companies for the year ending September 30, 1852, except the capital of Syracuse and Utica direct, which is taken from articles of association.

The capital stock, fixed by consolidation agreement, was \$23,085,600. Capital paid in September 30, 1853, \$22,213,983.81. Funded debt, \$11,564,033.62; cost of road, &c., \$22,044,529.25.

Stock and debts, and cost of road and equipment.

Year.	Capital stock.	Stock paid in.	Funded debt.	Cost of road, &c.
1854	\$23,085,600 00	\$23,067,415 00	\$11,947,121 04	\$25,907,374 41
1855	24,200,600 00	24,154,860 69	14,462,742 32	28,523,913 70
1856	24,136,660 69	24,136,660 69	14,763,897 29	29,786,372 50
1857	24,182,400 00	24,136,660 69	14,607,510 17	30,515,815 06
1858	24,182,400 00	24,182,400 00	14,402,634 69	30,732,517 54
1859	24,182,400 00	*24,000,000 00	14,333,771 21	30,840,713 71
1860	24,000,000 00	24,000,000 00	14,332,523 06	31,106,094 62
1861	24,000,000 00	24,000,000 00	14,613,005 50	31,524,226 15
1862	24,000,000 00	24,000,000 00	14,279,593 37	31,787,307 30
1863	24,209,000 00	24,209,000 00	13,779,648 36	32,740,168 02
1864	24,386,000 00	24,386,000 00	13,211,341 57	32,879,251 38
1865	24,591,000 00	24,591,000 00	14,627,442 77	33,701,610 56
1866	24,801,000 00	24,801,000 00	14,095,804 34	34,133,911 35
1867	25,537,000 00	25,537,000 00	12,069,820 18	36,594,405 52
1868	28,780,000 00	28,780,000 00	11,458,904 11	36,607,696 87
1869	28,795,000 00	{ 28,795,000 00 }	11,398,425 87	37,603,696 87
		{ 123,036,000 00 }		

* \$182,000 stock retired and bonds issued instead.

† Interest certificates.

Earnings and payments other than for construction.

Year.	Gross earnings.	Transportation expenses.	Net earnings.	Interest.	Dividends.	Other payments.	Total payments.
1854.....	\$5,918,334 50	\$3,088,041 23	\$2,830,293 27	\$656,513 10	\$1,135,505 75	\$111,059 59	\$4,981,119 67
1855.....	6,563,381 14	3,401,455 65	3,162,125 49	839,928 10	2,875,767 08	111,182 38	7,228,333 21
1856.....	7,707,348 18	4,097,867 18	3,609,481 00	931,376 95	1,919,564 00	111,182 38	7,060,190 51
1857.....	8,027,351 41	4,453,515 54	3,573,735 87	970,871 12	1,919,564 00	113,294 38	7,457,245 04
1858.....	6,528,412 70	3,487,292 47	3,041,120 23	976,192 18	1,919,564 00	113,294 38	6,496,343 03
1859.....	6,200,848 82	3,340,429 11	2,861,419 71	970,059 62	1,679,782 00	176,753 77	6,176,024 50
1860.....	6,957,241 01	4,278,840 81	2,678,400 20	985,273 04	1,440,000 00	175,966 50	6,879,379 35
1861.....	7,399,042 06	4,647,979 11	2,661,062 95	1,001,977 16	1,440,000 00	174,965 15	7,984,931 49
1862.....	9,350,627 77	5,607,750 33	3,743,077 44	1,021,193 12	1,440,000 00	173,967 75	8,249,911 20
1863.....	10,897,631 38	6,882,632 91	4,015,998 47	998,140 49	*1,730,400 00	172,060 02	9,743,923 42
1864.....	12,997,889 83	9,346,184 36	3,651,705 47	1,020,765 38	*2,279,173 50	256,142 26	12,908,265 56
1865.....	13,975,524 39	10,882,358 09	3,093,166 30	974,169 26	*1,542,933 00	569,634 23	13,909,094 58
1866.....	14,596,785 68	11,013,441 24	3,583,344 44	1,049,995 85	*1,552,353 00	494,334 38	14,110,154 47
1867.....	13,979,514 00	10,653,692 39	3,325,821 61	943,880 06	*1,734,831 00	327,202 92	13,659,606 97
1868.....	14,381,303 38	9,238,162 87	5,143,140 51	857,802 68	2,110,248 00	272,012 64	12,478,236 19
1869.....	15,586,616 39	9,055,485 18	6,531,131 21	894,729 87	{ 2,418,760 00 } { 11,935,024 00 }	278,604 15	14,582,633 20
Total.....	160,984,152 64	103,444,138 47	57,540,024 17	15,099,067 58	31,063,519 33	3,570,956 88	153,177,672 26

* Includes United States tax.

† On interest certificates.

HUDSON RIVER RAILROAD COMPANY.

(Organized March 1, 1847, under the provisions of chap. 216, Laws of 1846. Original capital stock \$3,000,000; whole line opened October 1, 1851.)

Stock and debts and cost of road and equipment.

Year.	Capital stock, as by charter, &c.	Stock paid in.	Funded debt	Floating debt.	Cost of road, &c.
1851	\$4,000,000 00	\$3,703,229 23	\$5,646,884 92	\$159,427 58	\$9,305,551 09
1852	4,000,000 00	3,740,515 90	6,046,395 00	956,590 42	10,527,654 75
1853	4,000,000 00	3,727,826 80	7,964,335 00	380,104 26	11,780,954 24
1854	4,000,000 00	3,757,891 97	8,006,435 00	927,369 05	12,391,363 55
1855	4,000,000 00	3,758,466 59	8,842,000 00	408,362 84	12,737,898 03
1856	4,000,000 00	3,761,600 00	8,842,000 00	399,311 16	12,802,528 24
1857	4,000,000 00	3,758,466 59	8,842,000 00	453,315 51	*11,283,019 12
1858	4,000,000 00	3,758,466 59	8,842,000 00	455,003 04	11,328,986 96
1859	4,000,000 00	3,758,466 59	8,842,000 00	414,654 35	11,388,279 64
1860	4,000,000 00	3,758,466 59	9,107,000 00	182,106 10	11,800,445 50
1861	4,000,000 00	3,758,466 59	9,137,000 00	773,411 27	12,049,599 75
1862	4,000,000 00	3,758,466 59	9,137,000 00	298,424 33	12,113,794 31
1863	4,000,000 00	4,422,023 08	8,938,750 00	4,167 00	†14,156,824 11
1864	4,000,000 00	†6,218,041 89	7,737,680 00	1,167 00	14,669,847 02
1865	4,000,000 00	6,563,250 38	7,762,840 00	1,167 00	15,264,586 57
1866	4,000,000 00	6,962,971 45	7,227,400 00	1,167 00	15,543,825 39
1867	4,000,000 00	9,981,500 00	6,394,550 00	1,167 00	17,505,037 26
1868	4,000,000 00	13,932,700 00	6,074,960 00	1,167 00	19,185,989 22
1869	4,000,000 00	16,020,800 00	4,309,220 00	1,167 00	19,919,531 42

* Reduction owing to discount, interest on scrip, &c., heretofore included, not reported this year.

† Discount, &c., omitted since 1857, again reported.

‡ Increased by conversion of bonds.

Earnings and payments other than for construction.

Year.	Gross earnings.	Transportation	Net earnings.	Interest.	Dividends.	Other pay- ments.	Total pay- ments.
1852	\$1,063,659 31	\$734,876 55	\$328,782 76	\$409,264 72	.....	.....	\$1,134,141 27
1853	1,298,617 09	918,253 17	380,363 92	462,705 08	.....	.....	1,361,048 25
1854	1,753,956 35	1,298,818 36	455,167 99	539,458 99	.....	.....	1,838,277 35
1855	1,812,087 77	1,208,141 39	603,946 38	581,092 50	.....	\$130,390 30	1,919,624 19
1856	1,905,710 51	1,239,573 01	666,137 50	618,112 50	.....	33,202 37	1,890,887 88
1857	1,902,827 91	1,213,947 92	684,379 99	690,399 77	.....	33,653 78	1,898,007 47
1858	1,636,412 28	1,041,773 43	594,638 85	634,969 14	.....	.....	1,676,742 57
1859	1,842,636 19	1,078,540 60	764,095 59	647,700 47	.....	.....	1,726,241 07
1860	2,047,145 52	1,269,094 84	778,120 68	631,647 89	.....	.....	1,900,672 73
1861	1,969,013 74	1,422,552 82	566,460 92	695,547 99	.....	.....	2,118,100 81
1862	2,637,528 93	1,367,575 55	1,269,953 38	637,015 64	.....	.....	2,924,591 19
1863	3,581,901 89	1,748,495 52	1,833,476 37	648,354 05	.....	.....	3,683,942 54
1864	4,139,600 05	2,545,306 88	1,597,293 17	594,487 92	.....	.....	4,081,011 80
1865	4,432,260 16	3,176,619 45	1,255,640 71	537,613 16	.....	.....	4,324,730 86
1866	4,845,526 16	3,050,426 73	1,795,099 43	515,918 11	.....	.....	4,827,562 96
1867	5,267,100 23	3,225,753 03	2,041,347 20	465,220 77	.....	.....	5,100,560 41
1868	5,523,611 80	3,793,319 11	1,730,292 69	433,092 76	.....	.....	5,572,826 23
1869	6,484,457 94	3,770,967 51	2,713,490 43	350,829 33	.....	.....	6,553,847 74
Total	54,177,203 83	34,093,888 87	20,083,314 86	10,093,520 79	4,566,608 77	3,887,498 69	52,641,517 12

* Scrip issued payable with six per cent. interest.

† Roadway, grading, bridging, engines, &c., and United States tax on earnings.

NEW YORK CENTRAL AND HUDSON RIVER RAILROAD.

(Articles of consolidation under provisions of chapter 917, laws of 1869, filed with the secretary of state November 1, 1869.)

Stock and debts.

Year.	Capital stock.	Consolidation certificates.	Funded debt.	Total.
1870.....	\$45,000,000	\$44,428,330	\$13,681,807 31	\$103,110,137 31
1871.....	45,000,000	44,428,330	15,231,718 93	104,660,048 93

Cost of road and equipment.

1870.....	\$59,765,684 06
1871.....	60,413,656 86

Earnings and payments other than for construction.

Year.	Gross earnings.	Transportation expenses.	Net earnings.	Interest.
1870.....	\$22,201,521 43	\$14,068,079 31	\$8,133,442 12	\$1,093,840 80
1871.....	21,972,105 47	13,578,572 61	8,393,532 86	721,308 04
	44,173,626 90	27,646,651 92	16,526,974 98	1,815,148 84

Year.	Dividends.	Other payments.	Total payments.
1870.....	\$6,861,241 29	\$228,975 59	\$22,252,137 29
1871.....	7,258,741 70	71,748 84	21,630,371 57
	14,119,982 99	300,725 11	43,882,508 86

NEW YORK CENTRAL.

Title of laws.

Chapter 76, Laws of 1853.—An act to authorize the consolidation of any two or more of the following railroad companies into a single company: Albany and Schenectady, Schenectady and Troy, Utica and Schenectady, Syracuse and Utica, Rochester and Syracuse, Buffalo and Lockport, Mohawk Valley, Syracuse and Utica Direct, Buffalo and Rochester, and Rochester, Lockport and Niagara Falls.

SECTION 1. No. 1. * * * * * The amount of capital, and the number of shares of the stock of the new corporations, which shall not be larger in amount than the aggregate amount of capital of the several companies thus consolidated, and shall not be increased, except in accordance with the provisions of the act passed April 2, 1850.

The provisions of the general railroad act referred to:

§ 9. In case the capital stock of any company formed under this act is found to be insufficient for constructing and operating its road, such company may, with the concurrence of two-thirds in amount of all its stockholders, increase its capital stock, from time to time, to any amount required for the purposes aforesaid. Such increase must be sanctioned by a vote in person, or by proxy, of two-thirds in amount of all the stockholders of the company, at a meeting of such stockholders, called by the directors of the company for that purpose, by a notice in writing to each stockholder, to be served on him personally, or by depositing the same, properly folded and directed to him, at the post-office nearest his usual place of residence, in the post-office, at least twenty days prior to such meeting. Such notice must state the time and place of the meeting, and its object, and the amount to which it is proposed to increase the capital stock. The proceedings of such meeting must be entered on the minutes of the proceedings of the company, and thereupon the capital stock of the company may

be increased to the amount sanctioned by a vote of two-thirds in amount of all the stockholders of the company as aforesaid.

Chapter 228, Laws of 1857.—An act in relation to the payment of fare on the New York Central.

Chapter 431, Laws of 1857.—An act directing the application of the highway-tax in the town of Mentz.

Chapter 137, Laws of 1858. An act to repeal the third section of the act in relation to the payment of fares on the New York Central Railroad.

Chapter 452, Laws of 1860.—An act to authorize the New York Central Railroad Company and the Oswego and Syracuse Railroad Company to erect a station-house at Geddes.

Chapter 851, Laws of 1866.—An act allowing the New York Central and Erie Railroads to extend their tracks and run their cars through certain streets in the city of Buffalo.

Chapter 278, Laws of 1868.—An act in relation to the directors of the New York Central Railroad Company.

Chapter 916, Laws of 1869.—An act to amend the act in relation to the directors of the New York Central Railroad Company.

Chapter 918, Laws of 1869.—An act authorizing the New York Central Railroad Company to increase its capital stock.

HUDSON RIVER.

Title of laws.

Chapter 216, Laws of 1846.—An act to incorporate.

Chapter 31, Laws of 1847.—An act to amend the act of incorporation. Additional stock may be issued, time extended for completion, &c.

Chapter 30, Laws of 1848.—An act to amend the act of incorporation.

Chapter 9, Laws of 1850.—An act to further amend the act of incorporation. Time extended for completion, authorizing the company to borrow money, &c.

Chapter 323, Laws of 1850.—An act to facilitate the construction of road by authorizing railroad and municipal corporations in its vicinity to aid the same.

Chapter 7, Laws of 1855.—An act authorizing this company to convey to the United States half an acre of land, for a site for a beacon-light.

Chapter 705, Laws of 1866.—An act authorizing this company to construct a bridge over Nepperhan Creek.

Chapter 278, Laws of 1868.—An act in relation to the directors of this company and other companies.

Chapter 916, Laws of 1869.—An act to amend the act in relation to the directors of this company. (Chapter 278, Laws of 1868.)

SAMUEL B. RUGGLES, of New York City, examined :

Mr. Chairman, I am not a merchant, forwarder, railroad director, nor a stockholder. I am simply a citizen of New York, who has been concerned for forty years in many public capacities, in forwarding our public works, and I feel a great interest in their success, and that they should become really useful to the people. I have no other interest but that.

The CHAIRMAN. What is your judgment as to the relative economy of transportation by rail or water ?

Mr. RUGGLES. There can be no question on that subject. Transportation by water is far the cheapest. I am here for the purpose of stating to the Senate committee what movements are now in progress in the State of New York for securing the full hearing of this question before your committee. It was rather my object in stating what had taken place here to give you information, and then ask leave to submit that information to you any time before the meeting of Congress. That was my object in calling, not so much to communicate any information of my own, but rather to state how the matter is now standing in our State.

The CHAIRMAN. We should be very glad to hear that, sir, if you are prepared to state the present movement.

Mr. RUGGLES. My only object in coming is to ask leave any time to submit to you such information as the State may furnish you before

you finally act in Congress; that the State may be heard before your committee, or rather that agriculture and commerce may be heard, as such, before your committee. As far as they can be embodied in any representation they wish to be heard. I speak for the farmers. I have been among them for the last four or five months studying their interest. I am an active member of the Chamber of Commerce, and have the commercial interest at heart, and, therefore, in behalf of agriculture and commerce, I wish to state to you how they are concentrating their efforts to be heard before your committee and understood by Congress. I have labored much over public matters. I was taken ill last summer, and went to the country for three or four months for my health. I spent them in the county of Delaware, one of our interior counties, one of the noblest and most important counties, quite away from all canals, and modes of transportation, until very lately. In Delaware County I was applied to. I thought it was useful in the three months I was there to collect the agricultural statistics of the State of New York, and arrange them topographically by the different sections of the State, having reference to their proximity to tide-water, or navigable water. I spent three or four months in making a table, arranging the whole agricultural products and interests of this State, in reference to their facilities for transportation. That is one of the tables I wish to submit to you before the meeting of Congress.

The CHAIRMAN. Shall you be ready to submit those statements before the 1st of December?

Mr. RUGGLES. I shall, sir. I ask leave to submit that table to you. It will show the portions of the State that devote themselves to planting, to grazing, the supplies of cereals of each portion, rendering necessary the movement of food back and forth in the State, their exports; in other words, the whole interior movement of the State will be embodied in that table, and I think it will be useful. That, however, concerns our State alone; it is rather local. Your function, as I understand, is much grander, not to adjust the interests of the State of New York, but the far greater question of how shall the interior valleys of of this country reach the ocean. That I take it to be the great problem before you; all the rest is incidental. From that point of view I ask leave to submit to you a report made of the cereals of the globe, which I had the honor to make, which gives you the total product of the United States, its movement toward the ocean, the total product of all the other nations, and its movement toward the ocean, which paper, I think, will be of use to you in making your investigations. I think it will contain many facts which you will be glad to get. How many thousands of millions of bushels is it that you want to move, what is the computation of this country, and what does it need to get that vast product to the ocean? That is your question, as I understand it.

There are abuses alleged in this State. Agriculture is compelled to pay out of its earnings immense sums to pay for fictitious capital. They allege that to be an abuse. When I arrived in Delaware County the agricultural society addressed me a letter, signed by Judge Hathaway, expatiating upon the abuse of having to contribute to pay interest upon a capital invested in the Erie Railroad of \$110,000,000. They were compelled out of their agricultural products to pay tolls to meet interest on that expenditure, which they alleged to be fictitious. They alleged that to be an abuse, to which I answered that the state of my health would not allow me to go into an angry controversy upon such an alleged abuse. If there was such an abuse, I told them, "your agricultural society of Delaware County is the proper company to protect

agriculture and to represent agriculture," and I left it to them as an agricultural society to find and apply the remedy. I did not propose to go into that myself. It is their function. They represent all the towns in the county; they have taken it up with great avidity; they have made it a subject of consideration.

I submitted to that agricultural society a portion of this topographical report which I had made, a few sheets; thereupon they have called an adjourned meeting for January, at which meeting they intend to take it up for that great county and to invite the co-operation and simultaneous action of all the agricultural societies of this State, united in one body to move as one man on this question.

That is the history of the organization. It is moving in that direction, so that you will have agriculture represented as a whole before you. When that is done the Chamber of Commerce of New York, which is the Chamber of Commerce, not of the city, but of the State of New York—chartered by colonial act, and represents the whole State, has charge of the commerce of the whole State—that body, as such, will again move with the agricultural societies, and they will be heard.

Those are to be the movements to be brought before your committee. The hearing will be merely to hand you the papers. I wished to let you know that these things were in progress. If you wish any verbal explanations, I can make them.

I will say that the whole country will expect from this committee to determine and ascertain what are the physical difficulties in this State and the physical facilities. I wish you to find out what is the level of Lake Erie above the ocean. How easy or difficult is it to get from that lake level to the ocean level? What are the difficulties the Erie Railroad meets in carrying these millions of tons from Lake Erie to the ocean? It clammers over an undulating surface 1,600 feet above tide. What has the Midland to do with it? Those roads are the outlets from your great western world to the Atlantic; one of them almost a dead level from the lake level to the ocean level. It seems to me that the fact that New York has the level is a cardinal point in this examination. First, New York stretches across the Union from ocean to lake; secondly, it has this God-given level, this great facility, gravitating to market down-hill, and the great question of unloading from the western world to the ocean on an inclined plane. As a fact, between that and Pennsylvania it is decisive. Having that wonderful facility by nature, shall it be given over to private individuals? Does it not belong to the community? Does it belong to any band of people? Is it not a sovereign power that the State and the nation ought to guard? Ought you not, as national representatives, to see that that level is properly used to abstract from it the best possible facility for the transportation of this immense product of cereals and deliver it to the ocean, in the great competition this country has with other nations for the feeding of the globe? This is a question that has now become vital to the American people.

I am a friend of the Erie Railroad. I emptied the first wheelbarrow-load of earth on the Erie Railroad, and spent a great portion of my life in making it. I spent large sums of money out of my own pocket. I made it; I began it. I raised the subscription; got the money together, went to the State and got \$3,000,000 loan entirely gratuitous, and I never have been paid a cent in my life. I am, therefore, partial to the Erie Railroad. I was proud of it once; I would be proud of it again if it behaved well, but I see they say they have spent \$110,000,000 in making that road. I cannot believe it. The money has not all been spent in emptying the wheelbarrow as I did. They have not spent

\$110,000,000. I see the president has gone to London to borrow \$40,000,000 more of Bishop Shimer, or some such name, which is to added to the \$110,000,000, making \$150,000,000, on which gigantic expense the same agriculture and commerce have got to pay tolls enough to make up the interest. I say that is a national abuse which, if true, this committee ought to correct.

The CHAIRMAN. In general terms, are we to find the solution of this question of cheap transportation in improving water or railroad lines?

Mr. RUGGLES. Unfortunately, the water in our northern latitude is liable to freeze, and although there is an ingenious gentleman offering to put hot pipes in the canal, whence they will warm it, I think it will freeze up. I spent a portion of my life in breaking the canal. The ice is our deadly enemy five months in the year. The ice in Lake Erie forms five months. I have seen the canal frozen up the 10th of November; therefore, five months in the year there is an absolute embargo. What are you going to do with those thousands of millions of cereals? The cold is the great difficulty of the North. If we had the canals five or six degrees of latitude further south it would be more convenient to transportation. They will have to come to the railroad and carry things by land. The question is of serious interest; it is impossible to leave it out.

Mr. DAVIS. Could not the climate be found that was not subject to such ice?

Mr. RUGGLES. Our freedom is held by latitude 42. The parallel of 42 is a latitude of freedom, but water freezes north of 42. Along the line of 42, a hundred miles each side, is the great belt of the temperate zone. It is a choice portion of this continent. It cannot go down the Mississippi. You may possibly get down through the South, but that is very doubtful. At any rate, we here in the temperate zone see nothing but the Pennsylvania Railroad, the Erie Railroad, and the Erie Canal. We see the great giants, the Central Railway and the Erie Railway, contending for the prize. Not to use an irreverent figure, we think we are sometimes crucified between these gentlemen, too. I see Mr. Watson says in his address to his stockholders that the Erie Railroad is to be managed in reference to the West. So it should be.

The CHAIRMAN. Have your investigations ever included the charges on water and rail in the different European countries?

Mr. RUGGLES. No, sir; I have not looked into that. The charges are generally higher in Europe than they are here.

I know that cheap transportation is the great secret of the age, and that it has caused the wealth of modern nations. Cheap locomotion by land and water is the whole cause of the rapid development. Europe has developed more than this country because they have secured cheap transportation. It is the great discovery of the nineteenth century to navigate the land. It is for you to say whether we shall have the benefit of cheap transportation, or whether it shall inure to the benefit of Wall street. Shall the people of this great republic have the benefit of that, or will you hand it over to such cattle, such beasts of prey, as have it?

The CHAIRMAN. What is your view as to how that is to be accomplished?

Mr. RUGGLES. I am not wise enough to answer that. If we were a united, consolidated Government, I think it would be very easy.

Mr. CONKLING. Take the matter as it stands, what do you say is the true process, although you may not be prepared to indicate details? What do you say, in general, about the remedy possible and the remedy needed?

Mr. RUGGLES. The question complicates itself with morals as well as statistics; with the morals of the legislature, national and State. There is a deep difficulty standing there. I saw soon after the erection of the Erie Railroad that it was too great a power to put into the hands of any body of men, and I at once induced a friend of mine to introduce a bill to make the Erie Canal a State work, which would have saved all subsequent difficulty. It failed; I was in advance of the age. They did not think that would do; they thought the State would mismanage it as much as others, and the bill was defeated by a small majority. Long ago in Austria they were taking back their grants to roads. They said that the English were ruining themselves; that they would take all concessions back and manage by the state. And I think now that the great trunk lines ought to be managed by the State. Corrupt as may be the State legislature, still I think it is better than the unchecked domination of a private company. Of the two evils, I prefer that the State should manage it altogether; I am not sure that it is the best remedy. If the State does not manage it, they should have some board to check abuses. This State has reserved the right to modify all charters. All the talk about vested rights is of no use; we have no legal impediments in our way; we can brush away all the charters in five minutes. All the charters in this State are liable to repeal at any moment. There is no vested right at all. The State can resume the whole thing whenever they wish. They can appoint commissioners to regulate the charges, and it is possible that a judiciously selected board of railroad managers might be the remedy.

Mr. CONKLING. There are vested rights which the State is at liberty to resume in certain events and at certain times.

Mr. RUGGLES. It is provided that every corporate body of this State is liable to have its charter abrogated, taken away, or repealed by the legislature.

Mr. NORWOOD. You seem to answer Senator Conkling's question in its application to the State, and not in its application to the Government or the country at large, so as to take in the scope of our investigation; you but answer the question in that view. Discard, if you please, that moral feature of getting honest legislators, what in that case would you say was the proper remedy for the country at large to bring about cheap transportation?

Mr. RUGGLES. There are great advantages in asserting the power in the whole country, and one is that you will be clear of the obstructions made by small States, which interpose principally. Rhode Island might stop the progress between Boston and New York. There is some great advantage in the having of the assertion of a national authority.

Mr. NORWOOD. But suppose you cannot assert it constitutionally. Take the case as it stands with all State rights and Federal rights recognized, what remedy have you considered? What would be a proper remedy to be applied to give relief to the country in the way of cheap transportation?

Mr. RUGGLES. I have not considered that with the care and attention that I ought, to make an answer to such a committee. I should feel unwilling to risk a rash answer to a question of such exceeding gravity as that.

Mr. NORWOOD. You are not singular in that respect, sir; it is a question that we have not had answered yet.

Mr. RUGGLES. There is no doubt at all about this. One thing is physically possible, you see—and that is my reason for speaking of the acclivities—it is a certain physical fact that an inclined plane from Lake

Erie and the Hudson River can be made, and you will have a facility for transportation not equaled in the world. You can make a railway with an inclined plane from Buffalo to Albany, so that you could unload the whole western country. It is physically possible to unload all your vast western world, with a sufficient number of tracks on an inclined plane. I maintain that that is possible.

Mr. DAVIS. Have you estimated the miles of tunnel in doing that?

Mr. RUGGLES. It would require very little on the Central Road—very little indeed, hardly any. I would avoid tunnels.

Mr. NORWOOD. As I understand your answer, then, the remedy you would suggest would be by a number of railways from Lake Erie to the sea-board?

Mr. RUGGLES. I think that the railways should occupy that inclined plane. If you throw away that, you throw away everything. Under some government or some authority that little piece of land should be availed of to its utmost capacity. On that route you reduce transportation to its minimum.

Mr. NORWOOD. Do you think that would accommodate all the produce of the West, taking the valley of the Mississippi?

Mr. RUGGLES. When the question arose at the Hague as to whether Russia or the United States was to feed the world, or which nation was to feed the world, I maintained that the United States and Russia were the great competitors, and then it became necessary to know how much we had. We got the number of bushels in Europe and the number of bushels in the United States. But that was only the growth in 1870. Who can tell what will be the product of the interior in thirty years? It was just about 1,600,000,000 of bushels on this continent. Europe produced about 4,500,000,000—all the nations of Europe, I mean—of which Russia produced a very large amount, disclosing itself as the great competitor of the United States. It soon became evident that there were but two *dramatis personæ* in this game—Russia and the United States. In England, rich in everything but that, they have to stand still and be fed. France just feeds itself, and that is all. Holland barely feeds itself. The great surplus-holding nations are Russia and the United States, and they are very much alike. Russia has almost an inclined plane from the great interior lands down to the navigable waters. She has a more gentle incline than we have. She has the river Volga, which is a better river than the Mississippi in some respects. And there was the great comparison: which of those two were to feed the world? And that is the great question now.

But to return. We know this, that the United States did produce say 1,500,000,000 of bushels of cereals, that being in 1869, my report being dated in 1870.

By direction of the Secretary of State I corresponded all over the globe and got the statistics of all the nations, to be able to speak accurately. I think you will find the tables interesting. I hope the committee will discuss this great question of all, to wit, the power of the United States to feed the world; and I think we, as citizens, have a right to ask the committee to consider that subject. (To Mr. Norwood.) You asked me whether the inclined plane that we possess in New York is competent to unload any amount that the West can in the future produce.

Mr. NORWOOD. My inquiry was, whether you think that those lines would accommodate all the produce of the West, including the Mississippi basin, not only present but prospectively.

Mr. RUGGLES. Perhaps not the southern portion of the Mississippi

basin, but all the northern portion. Perhaps it would be more moderate to confine ourselves to the present century. I think down to the year 1900 we can do the work; of beyond that I could not say. And in 1900 what a population you will have, and what will be the population you will have to feed. You will find that Europe will increase very largely. Europe is growing as well as the United States. We may not get over 75,000,000 of people of our own.

And there, again, is a thing to be considered: the reduced rate of our increase of population. It is a serious fact, and rather a relieving fact. We have been growing more rapidly than our welfare demands. We cannot provide for so many people. The ratio of increase is much less than it has been. Marriage is less productive. The cardinal fact stares you in the face that the children of each marriage are less productive than they were fifteen years ago. Mr. Walker has made some able papers about that, and there is no doubt that we shall not grow as rapidly as we have done. The number of children for each marriage is diminishing; that is the long and short of it. France has long known that. France produces hardly children enough to keep her account good. We now have an agricultural population of 40,000,000 of producers of cereals. What will that 40,000,000 be in 1900? Our enthusiasts say 100,000,000; but Mr. Walker, who has a very clear, good head, has put it down to 75,000,000. But if 40,000,000 of people produce 1,500,000,000 of bushels of cereals, 80,000,000 of people would produce 3,000,000,000 of bushels of cereals. I mean to say that the 3,000,000,000 of bushels can be carried over those railroads.

One thing more is to be taken into consideration. The laws of trade are about the best laws in the world, the great law of demand and supply. If you make railroads enough to allow them to compete, that may be your remedy.

The committee adjourned.

NEW YORK, *Friday, October 17, 1873.*

The committee met pursuant to adjournment.

EMERSON FOOTE examined:

Mr. Chairman, I am one of the directors of the New York Steam Cable Towing Company, and I am the principal owner of the stock in that company. I own and control the stock of the company.

I have been connected with it since the first experiment at Albany in 1871, and have since been the promoter of the enterprise by carrying it forward to its various stages of development, until now we have it in operation on the canal, as you have seen, between Buffalo and Lockport.

The CHAIRMAN. I will state that the committee have investigated that subject somewhat. They have heard Mr. Faulkner as to the principle of the process, and we also have examined it personally, and therefore anything as to that, perhaps, would not be necessary; but anything else you can state that will inform the committee in reference to what it has done, and its practical workings, we will be very glad to hear.

Mr. FOOTE. The system has been in operation the past summer between Buffalo and Lockport, and we think we have demonstrated its cheapness and its speed. We have done such business as was offered to us and have done it at such rates as the boatmen would pay to us. Those rates have been the rates of horse-power, and added to it we have received what they were willing to pay for being towed in that strong current at Buffalo, which involves an extra expense to them.

Although we have not made our full expenses this summer we have done what business we could, and until we can equip the whole portion of that canal so that the boatmen can make their through rates from Albany to Buffalo, we cannot expect to do all the business. We have done enough, however, to show the economy of the practical working of the system. I have here some lists prepared, showing the earnings of the tow-boat M. M. Caleb for the week ending August 23, for August 24 to 30 inclusive, and for the week commencing September 1 and ending September 6. In that statement the Caleb did most of her business from Tonawanda to Buffalo against the current, which varies, as you know, from nothing to four or five miles to the hour. The distance is twelve miles. We have towed against this current various tows at a speed averaging three miles to the hour. On the 18th of August we towed four boats with an aggregate tonnage of 550 tons.

The CHAIRMAN. Four boats in one tow?

Mr. FOOTE. Yes, sir. The receipts were \$20.60. The expenses that we were under were \$21 for all day. The names of the boats on this statement are here for reference. On the 19th we took five boats, aggregating 600 tons, and received \$20.80, at an expense of \$21. On the 20th I took three boats, 450 tons, receiving \$17; expense \$21.

The CHAIRMAN. You took those against the current?

Mr. FOOTE. Yes, sir; everything is done against the current.

On the 21st we took four boats, 600 tons, receiving \$23, at an expense of \$21. On the 22d we took six boats with 1,000 tons, receiving \$37, at an expense of \$21. On the 23d we took three boats, 450 tons; received \$18, at an expense of \$21; making the number of boats towed 25; aggregate tonnage, 3,750 tons; and my total receipts were \$137.40, and expenses \$126.

On the 24th of August we took six boats with 1,050 tons; received \$35, and expended \$21. On the 28th we took 660 tons; received \$24; expenses \$21. On the 29th we took from Lockport five boats; 850 tons; received \$34; expenses \$21. On the 30th we took four boats, 500 tons, receiving \$24; making for those four days nineteen boats, 3,260 tons carried, receiving \$117 and expending \$84. The average tonnage per day was 701 tons.

September 1 to 6.—From Tonawanda to Buffalo we took four boats on the 1st; 600 tons; received \$24; expenses \$21. On the 2d we took three boats; 600 tons; receipts \$21; expenses \$21. On the 3d my man writes: "This is the heaviest tow for the cable, and I think the heaviest tow ever towed up the rapids at Black Rock. With current fully three miles per hour, this tow was towed two and a half miles per hour, and was equal to towing twenty-five boats down stream." That day we took seven boats; the aggregate tonnage was 1,284 tons; received \$37, expending \$21. On the 24th we took three boats, 600 tons, receiving \$21; expenses \$21. On the 5th we took four boats, 550 tons, receiving \$23, expending \$21. On the 6th we took six boats, 1,150 tons, receiving \$40, at an expense of \$21; making for the six days an average total of 797 tons per day, and a total tonnage of 4,784 tons; receiving \$166, and expending \$126.

Mr. DAVIS. What distance do you take them?

Mr. FOOTE. Twelve miles, it is called, from Tonawanda to Buffalo. This boat stood there ready to take anything they could get. The daily expense is for the whole day, whereas the boat was only employed four hours to do that work. We have at other times, exceptionally, during the summer taken very large tows, one of which amounted to 1,376 tons. I think there were eight boats. We have also taken one of about 1,300

tons. Those are our largest towages. Last year we took against that current one tow of nine boats, but they were smaller boats, and, therefore, the aggregate tonnage was not equal to what we have carried this year.

Mr. DAVIS. You confine yourself between locks, do you?

Mr. FOOTE. We do not go through locks. We can go through the locks.

Mr. DAVIS. Have you ever done it?

Mr. FOOTE. Yes, sir. In our first experiment between Albany and Troy we started in the basin at Albany and went through the locks at Albany. I refer you to the report of Hon. Samuel B. Ruggles to the Chamber of Commerce, who represented that body in that experiment.

Mr. DAVIS. Why do you not go through the locks and make the tow right along?

Mr. FOOTE. Because it is not necessary, and it might consume a little time to do it.

Mr. DAVIS. Do I understand you that it is not necessary for the boats to go through the locks?

Mr. FOOTE. I am speaking about our towers.

Mr. DAVIS. Why not?

Mr. FOOTE. Let me explain. We intend to run the levels, of which there are nine, as set forth in our pamphlet. The first one from Buffalo to Lockport, thirty-one miles; the second, from Lockport to Rochester, sixty-five miles. Our present effort is to equip those two levels, a distance of ninety-five miles. We shall have six towers stationed on the level going through the little lift lock, I think they have there, which we would find no difficulty in doing, between Buffalo and Lockport. We shall have from day to day tugs to do the distance between the last lock at Lockport and the first one at Rochester.

Mr. DAVIS. My question did not lead to all the details. I only wished to know why you did not go through the locks, and if it was intended to confine yourself between them.

Mr. FOOTE. Because the tows are carried through by the State, and there is no necessity of our taking them through. We deliver and receive at locks. We *can* go through and have done so. All our boats will be taken from here there, but our intention is to do like a railroad train, which is the best illustration of our system. Our tower is a locomotive, the canal-boats are the freight-cars, and we take a tow of canal-boats as the locomotive takes the train of freight-cars, and run to a certain distance, when a fresh locomotive takes it and carries it through; and, as all canal-boats are taken through the locks by the State, I do not think it necessary for us to put our boats through, though we can if it should be deemed best to do so. We lay the cable then right through the locks and just work that distance.

One report which I gave of a day's work was one which Mr. Green, the engineer of the State commission, had done for a test. I presume Mr. Faulkner told you that we are not allowed to compete for the State bounty. We are excluded. The Belgian system which we operate is excluded by amendment. A joint resolution was passed through the legislature a year ago I think, the last session, requesting the committee appointed under the hundred thousand dollar prize act to examine and report this system. Mr. Green, who is the engineer of that committee, did not know of it until I sent him a printed copy, whereupon he went to Buffalo, and after his return wrote to our general superintendent, Madison M. Caleb, of the Western Transportation Company of this city, a report. In that report he gives a full account of his work-

ings. I can read the same if you would like to hear it. There are some points in it which I would like to present, bearing upon the cheapness of this system, what Mr. Green says about it, and showing his views of it.

TROY, September 8, 1873.

DEAR SIR: Having been requested by Mr. Emerson Foote, one of the trustees of the "New York Steam Cable Towing Company," to make a personal examination of the Belgian system of towing, now in operation upon the Erie Canal, between the cities of Buffalo and Lockport, I proceeded to Buffalo on the evening of the 25th of August, arriving at Buffalo on the morning of the 26th.

Upon my arrival I found the tug Clinton absent, and the tug Caleb undergoing repairs, rendered necessary by an attempt made during the Sunday previous to haul off a boat which was found hard aground in the canal, east of Buffalo.

On the morning of the 28th of August, the repairs of the Caleb having been completed, I joined her and proceeded, light, to Tonawanda, twelve miles, at a speed of six to seven and a half miles per hour.

At 9.45 a. m. we left Tonawanda with three boats, carrying an aggregate of 600 tons of cargo, in tow, bound for Buffalo. One mile below Black Rock the Caleb passed a boat laden with 100 tons, and towed by four horses, in 45 seconds. At 12.30 p. m. arrived at Black Rock lock, having made the run of eight miles in 2 hours and 45 minutes, and at an average speed of 2.91 miles per hour.

During the runs the speeds varied from $2\frac{1}{4}$ to $3\frac{1}{8}$ miles per hour. No difficulty whatever was experienced between these points. Before passing the lock at Black Rock, a fourth boat, carrying 100 tons, was taken in tow, and at 12.50 the tow again started. At 1.15 the last boat of the tow had passed the lock.

Time of passing the lock, 25 minutes; or six minutes per boat, including the tug. Arrived at Genesee street bridge at 3.25 p. m., having made the run from Black Rock to Buffalo in 2 hours and 10 minutes, with speeds ranging from $1\frac{1}{4}$ to 3 miles per hour.

Upon this part of the canal the current was found to vary from $\frac{1}{4}$ to 3 miles per hour. The minimum speed was of course made against the three-mile current.

During the run from Tonawanda to Buffalo, the power expended varied from about 35 to 43½ horses, all of which, except that which was expended in overcoming the friction of the machinery, was utilized in towing.

At 4.30 p. m. the Caleb left Buffalo, light, and proceeded to Tonawanda, where we arrived at 6.50 p. m. Deducting the detention at Black Rock lock (7 minutes) the average speed was six miles per hour; but nine and a half miles was made with perfect ease during the run.

During 12 hours and 18 minutes, including all stops and detentions, the Caleb ran thirty-six miles; towing 600 tons of cargo eight miles, and 700 tons four miles, equivalent to towing 200 tons thirty-eight miles at a speed of three miles per hour, against a rapid current, besides running twenty-four miles without a tow, and with an expenditure of power which, at the maximum, was only slightly greater than that required to give our best steam canal-boats a speed of three miles in the ordinary canal and against the ordinary current of half to three and a quarter miles per hour.

On the morning of the 29th the trip was continued to Lockport.

Left Tonawanda at 5.20 a. m., and reached Lockport at 8.50. Time, 3 hours and 30 minutes; distance nineteen miles; average speed, 5.43 miles per hour, including detentions.

At 10.25 a. m. left Lockport on return trip, light, and reached Pendleton, seven miles, at 11.45 a. m.

At 12.30 had used 450 pounds coal in running about 11 miles, or about 41 pounds per mile. At this point took a boat in tow carrying about 100 tons, and arrived at Tonawanda at 3.10 p. m., having made an average speed of 3.46 miles per hour, including detentions due to breaking hawser and fouling cable in Tonawanda Creek. The coal consumption for nineteen miles was 800 pounds, or at the rate of 42 pounds per mile.

At Tonawanda four 200-ton boats were taken in tow, making in all about 900 tons. Left Tonawanda at 3.45 p. m., and reached Black Rock, eight miles, at 7.20 p. m. Time, 3 hours and 35 minutes, with an expenditure of 1,100 pounds of coal between Tonawanda and Black Rock. Here the coal consumption was $137\frac{1}{4}$ pounds per mile, or about $30\frac{1}{4}$ pounds per 200-ton boat per mile, against a strong current.

At this point I left the Caleb; the tow, however, proceeded to Buffalo, arriving there the same evening.

Before witnessing the operation of this system of towing, I was well aware that, so far as the efficient application of power is concerned, no other mode of towing or of steam propulsion can ever hope to compete with it. My impression was, however, that very serious difficulty would be experienced in traversing the curves of the canal, and that the passage of the locks would be attended by considerable difficulty and unavoidable delay.

A personal examination, however, of the practical working of the system has, in some degree, modified these early impressions, so far as relates to the difficulties to be overcome.

As regards the economical application of the power, my opinions are, of course, unchanged.

As to the curves of the canal, I am now of the opinion that they may be traversed by this system without material difficulty or inconvenience.

In the matter of passing the locks, however, I am still of the opinion that there may be more or less of vexatious delay; and, yet, experience may demonstrate that this delay will not be greater, per boat, than it now is. Much will, of course, depend upon the arrangements made for insuring a speedy passage of the locks, and very likely it may happen that a tow of five boats, together with the tug, may be locked in thirty minutes, or five minutes per boat.

I am also of the opinion that a decided improvement may be in the disposition of the machinery in the tugs, and that it may be well for your company to carefully consider, before laying the balance of the cable, whether it may not be better to lay it from lock to lock, rather than to attempt to lay a continuous line from Buffalo to Albany. Such an arrangement, it seems to me now, might enable you the more effectively to manage the "slack" which must exist to a greater or less extent, and which must vary with the number of tugs in operation.

In conclusion, I have to say that, from the examination which I have been able to make, I am of the opinion that the cable system may be made an economical, efficient, and profitable means of towing upon the Erie Canal.

The loss of time at the locks will be partly, and perhaps wholly, made up in the increased speed between locks, leaving the saving in the application of the power a clear gain over other modes of propulsion.

It is to be understood, of course, that this is merely an expression of my impressions, formed after witnessing the performances of the Caleb between Buffalo and Lockport, without, however, having had sufficient time to carefully study all the questions involved. Such a study might remove all doubts, or it might strengthen my earlier impressions, especially as to the question of lockage and as to the ultimate economy of the system as a whole.

I am, sir, very respectfully,

D. M. GREENE.

MADISON M. CALEB, Esq.,

General Superintendent New York Steam Cable Towing Company.

The report of Mr. Greene is dated Troy, September 8, 1873, and it came entirely unsolicited. Mr. Greene asking what we wished in the matter, I told him that I desired him to go there and see for himself. This bears upon the points of cheapness, of speed, and shows what we have done. This is really since you, gentlemen, witnessed the operation.

THE CHAIRMAN. Have you made any computation as to the relative economy of the two systems, cable and horse power?

MR. FOOTE. Yes, sir.

THE CHAIRMAN. Can you state the result—the expense of each?

MR. FOOTE. I can.

MR. DAVIS. What coal do you use?

MR. FOOTE. The coal that my men bought in Buffalo. I believe it is Blossburg coal. I do not know what coal he does use. Ordinary coal. You, perhaps, are aware that the machinery of this Caleb is duplicated from machinery that we bought in Europe, and we have adopted that same machinery.

MR. DAVIS. You use soft coal, do you, or hard? It makes a difference in the number of pounds you use.

MR. FOOTE. Well, sir, I am not practical in matters of machinery, and I do not know and I could not tell you whether it was soft or hard, but it is what is generally used, and the same as all the tugs there use and have been using. I have here something that will indirectly give that information—a list of the arrivals and clearances at the port of Buffalo for a number of days, commencing with August 26 and extending to October 1. I have here also other extracts from the Buffalo papers since that date, which I have not added to this list; but I find that the average number of boats daily to and from Buffalo is 109. We expect to

charge no more than horse-towing rates paid to horse-towing companies; that is, 30 cents a mile. Therefore, we take a boat from Buffalo to Rochester, ninety-five miles, for 30 cents a mile, which is \$28.50.

Mr. DAVIS. How many tons in a boat?

Mr. FOOTE. Whatever there happens to be, no matter what is in it. It can be towed better that way, because we have the current with us toward Rochester and back again. We take anything.

That is one point that has made this system recently very popular with all persons who own canal-boats and do business there. Mr. McGee has seen us in reference to making arrangements for taking his corn from a point where he reaches the canal to Buffalo, by which he gets a full load instead of taking 100 tons, which is all they will allow a boat to take westward, no matter what its tonnage is. He says that he can get a full boat by our system at the same cost of 100 tons.

I am not acquainted with the country up there, and I never have seen the system worked myself. Therefore, I speak from the information got from my agents, and from Mr. Caleb and the other gentlemen there.

I understand, starting from Watkins to the west are a number of stone-boats which require six and eight horses to pull them against this current to Buffalo. We will take them with 240 tons—enough of them to aggregate 1,000 or 1,500 tons—against that current. I can buy machinery in England guaranteed to take 2,000 tons four miles an hour against the usual current, coming this way.

Now we will say instead of 109 boats there are 100 boats doing the whole business on the canal between Buffalo and Rochester, or back again. Our daily receipts will be, at towing rates, 30 cents a mile, and that rate is 5 cents lower than usual. I take it at the summer rates. We shall have \$2,850 daily receipts. Our total expense is the running of 17 of our tows. They have been run here a portion of a day—say three-quarters of the day—for \$21. Our superintendent says that he will be able to run the boats twenty-four hours for \$35 each. That is \$595 daily expense against daily receipts of \$2,850, leaving \$2,255 daily profits; or, for two hundred days, \$451,000.

Now, it is the intention of the company to charge horse-rates, but the advantages are so great to the owners of canal-boats towed, by reason of increased speed and the saving of some expense of men and of the horses, that they will be able to get either three times their annual income from one boat, or can divide that, in the ordinary course of competition, with the transporters, or let it apply on the freight that comes over the canal.

Again, the greater the speed the less our expense, and the greater the speed the greater is the present capacity of the canal department.

The present State toll-sheet is about \$3,000,000. The State, then, can either receive, by the simple introduction of this speed, three times its present toll-sheet, which would be \$9,000,000 in a season of two hundred days, or it can reduce its tolls one-third of the present amount, which, on a bushel of wheat, is $3\frac{5}{16}$ of a cent, I think.

In other words, given, either take the \$6,000,000 and retire the canal debt, indirectly giving the benefit to cheap transportation in two years time, or else, given, \$6,000,000 annually by the introduction of this system to the benefit of cheap transportation. That is two cents a bushel on wheat simply by the increase of the speed up to four miles and a half an hour. We have made that speed with large tows. Coming this way with the heaviest tows, there is no doubt but what we can run (or at least that it is possible) five miles to the hour. When we have our boats running the levels, as we shall have all the way through, so

long as our daily expense for that boat is \$35, and we calculate that to be our expense, we do not care whether it carries one boat or six at a tow, but it does the business. And we know on these facts the number of boats going through.

Mr. DAVIS. What is the ordinary speed of horses?

Mr. FOOTE. One mile and a half the hour; in that neighborhood.

The CHAIRMAN. I understand your answer as to the difference of expense, that there is no difference in the expense of towage, but the saving is in the increased amount and the increased power of the canal.

Mr. FOOTE. I show you here that I can make a profit of \$450,000 in 200 days, charging the lowest cost of horse-power. I can reduce that profit as much as I choose, and if I take it all off it will bring that rate very much less. Taking the distance from Buffalo to Troy, and taking horse rates at 35 cents a mile, and calling it three hundred and fifty miles, which I believe is the correct distance, it costs 61 cents a ton, saying each boat averages 200 tons, to take a ton from Buffalo to Troy.

The CHAIRMAN. By horse-power?

Mr. FOOTE. By horse-power. Now take the same distance, three hundred and fifty miles, and taking my tower that goes three miles and a half the hour, and it takes me 100 hours to go from Buffalo to Troy if I have no detention—four days and four hours. I allow enough for detention to bring that up to six days. The less days I do it, the cheaper I do it. That running my boat at \$40 a day instead of \$35 is \$240, my total expense of running my tower from Buffalo to Troy. Now I can get engines that will pull 2,000 tons, which makes twelve cents a ton; so that the difference, making those great allowances—and my facts show that I am running better than that—is in favor of my system, 49 cents a ton; or, taking a ton of wheat, the transportation or towing charges are 12 cents a ton as against 61 cents by horse-power. I do not know how many bushels of wheat there are in the ton.

The CHAIRMAN. Thirty-three and a third.

Mr. FOOTE. Well, you see I take 33 bushels of wheat from Buffalo to Troy for 12 cents, simply cost of transportation. I mean, of course, application of power.

The CHAIRMAN. One other question. What guarantee has the public that when you have your cable-tow laid through the entire length of the canal, and thus the towage is placed in the control of a single company, that the price will not be increased above that of horse-power? In other words, the difference between a monopoly and everybody being able to put a horse on.

Mr. FOOTE. I did not want to say anything about this; but I need not tell you, you can see from my remarks that this is a hobby of mine, and I have the control of this company. I can keep that control. I am going to do so, and you can bear me witness, all of you gentlemen here, for it. I am going to keep that control for the purpose of making this thing not only a good paying concern, but popular with the people, with the canal-men, and to give cheap food to the world; to help the city and State of New York. I can do that. And again, too, I see that there is going to be no necessity for a long time for us to reduce our charges, for the reason that the benefits to the outside public and to canal-boat owners are so great that in the ordinary course of transportation and by paying them at least a hundred per cent. more income than they get now, they can be benefited, and those rates will be all that the people will demand of us.

Again, those rates are going to be still further reduced when the State will take the locks and will apply modern approved inventions to pass-

ing boats through those locks. For instance, the State statistics show that the lockage at Alexander's locks, when they made a test there, amounted to four minutes for each boat. Mr. Young, the manager of the Delaware and Hudson Canal Company, a private corporation, told me that he could lock by the drop-lock that they have upon that canal in two minutes' time. Now, that means this—that the present tonnage of the canal, the whole canal, was last year 6,670,000 tons. Three times the speed, three times the capacity on four-minute lockages. On two-minute lockages it again doubles the capacity. Now, the more business done on the canal the more tons can be lowered, and the State receive the same amount as at present. You see now how the advantage to the State bears on the reduction of the cost of transportation.

I said before that the owner of the canal-boat makes now only seven round trips, making, according to figures that I have of a man who owned the boats, and not allowing for loss of horses by drowning, \$124 each trip. In other words, he makes about \$900 income from one boat. With my system he makes \$2,700 income, and he can afford to give one-third of that amount in favor of cheap rates. He saves the expense of his labor; he saves all risk of horse-flesh; and, again, when we can get the present style of canal-boats, and I can change this system to run by the ton and not by the boat, which I now have to do, then boats of uniform size, of models for speed and strength, can be brought there, and an increase of speed will come from it which, in turn, as I have shown before, cheapens the transportation.

The CHAIRMAN. I have always understood that the capacity of a canal was measured by the number of boats that could pass through a single lock. Does not this increased capacity depend entirely on the change of locks rather than upon your process?

Mr. FOOTE. The capacity of the lock has been shown, by boats kept and collected for that purpose, that the lock might have full employment, to be four minutes. Now the State engineer's report shows that if every boat could be locked through in four minutes, the present capacity of the canal is 12,000,000 tons on single locks and 18,000,000 on double locks. So that, of course, if the lockage can be increased to two minutes, you could double the tonnage through. I do not think that it is the capacity of the present canal that is at fault. It is the trouble in its present condition, and in its being behind the time in modern improvements. There is no steam applied to open and shut a gate. Steam has never been applied by the State for the purpose of doing this lockage as is done upon a private canal like the Delaware and Hudson Canal.

Again, we have to draw through mud. In the report of the Hon. Samuel B. Ruggles, of that exhibition that he witnessed, he says that the boats were drawn through mud a foot deep, and so it is on the canal in a good many places. If that mud is removed, and the canal, at the present time, is put in proper shape, as prescribed by law, I think that there is tonnage enough there to go very far toward solving this question of transportation without any further changes. Of course this does away with horse-power. Another epizootic might stop the whole canal business for a week or two. It brings it in the control, by our plan, of one company, and the intention and the policy of the company are just as I have stated.

The CHAIRMAN. Perhaps your policy might change when you get the entire control of it and the horses were all off. That is, you gentlemen who had the good intentions might pass away, and somebody who was not so good might take charge of it?

Mr. FOOTE. Of course, sir, I can only speak for myself, but that applies to almost everything. We have no competition with these other people; that is, we do not oppose any in this new scheme of steam-power or of the present system. The canal-boat men who have been towed by this system have been coming in here almost daily and without exception. I will not say without exception, but except very few, they are all in favor of it. Why, they say, "we would rather pay you 50 cents a mile and be towed by you, because we get three times our income;" and again they say, "we can get rid of our horses; we can lay in Buffalo until we get our own freights for our goods, and not have to accept lower rates for fear that the expense of our horses would be too much for us."

The CHAIRMAN. That is rather against you, so far as cheap transportation is concerned?

Mr. FOOTE. I do not know whether it is against or for me. I give the statements just as they are.

But again, the persons who oppose us most are the staple owners. I hope that we have not any severe opposition from any one. We intend to work in that way for the benefit of the people and for cheap transportation, and I do not know of anything that is more practicable.

This is no experiment, as you will understand. Since Mr. Faulkner has seen you I have received the report of two hundred and fifty miles of this system recently gone into operation on the Rhine by a company called the Rhinish Towing Company, and they calculate to do that work there, and are doing it satisfactorily.

Mr. DAVIS. Can you give us the relative cost directly between rail and your system?

Mr. FOOTE. I could only make this one statement which you perhaps have seen. In Francis T. Walker's report of the Produce Exchange he gives a statement based on the New York Central Railroad, and shows that if the New York Central Railroad charge the same tariff the year round which it does in summer, the road could not pay dividends upon its stock. Now, I believe that with this system of mine in operation that summer rate will have to be reduced so much to compete with the tonnage of the canal, not only in its present freight, but a great deal of freight that will be brought back by the increase of speed, which will be nearly up to that they claim freight trains can run. I believe that that tariff will be so much reduced that the New York Central Railroad cannot in winter-time put its rates high enough to make up the average.

Mr. DAVIS. You have not a direct answer as to what is the relative cost?

Mr. FOOTE. I have not, sir.

Mr. DAVIS. And the pamphlet to which you refer does not give a direct answer as to the relative cost between water and rail?

Mr. FOOTE. Yes, sir, the New York Produce Exchange Report, which is publishing, gives it.

OFFICE OF THE NEW YORK STEAM CABLE TOWING COMPANY,
No. 40 Broadway, P. O. Box 5241, New York, September 10, 1873.

DEAR SIR: It is with great satisfaction that I observe an earnest and constantly increasing interest in all efforts and schemes which are not only demanded by the necessities of trade and commerce, but which are calculated to promote public interests and to benefit all classes of society.

In this connection my attention has been called to a circular issued by your committee on the subject of transportation—a subject of vast and general interest and of primary importance to the merchants and business men of the city of New York.

The city of New York has enjoyed the monopoly of the western trade so continuously and long that its merchants and real-estate owners were becoming either wholly

indifferent to the subject, or over-confident in the erroneous conclusion that, because the capital of the country flowed towards the city of New York, therefore trade and business would naturally follow in the wake of money and find the same common center. The reverse is the fact. Trade will seek the cheapest outlets, and money will follow trade. How important then to every business man, every community, and every government becomes the subject of cheap transportation! Under our system of government individual enterprise must in the main solve the great questions connected with the employment of capital and labor. The control of such interests by the state is not only inadequate and inefficient, but productive of positive burdens and evils, which can only be effectually remedied and removed by the employment of individual capital and enterprise.

Look, for instance, at the management of our State canals by either political party. Incompetency and inefficiency pervaded the whole system, and were we to apply that management which the State provides for one of its most important interests to any of our great trunk lines of railroad, we venture the assertion that bankruptcy would be the inevitable and speedy result.

Again, the capacity of our canals bears no reasonable proportion to the expense incident to their maintenance.

If, however, the new constitution that has been acted upon by the last legislature shall receive the approval of the next legislature and the sanction of the people, it is believed that the radical changes that will then take place in the management of the canals will materially lessen the cost of their maintenance and nearly double their capacity.

I notice that your committee advocates a ship-canal, with a view, I presume, of enabling the steam-propellers that load at the lake ports to come with their cargoes to the city of New York without breaking bulk.

Permit me, gentlemen, to suggest that this scheme is neither practicable nor would it cheapen transportation. The lake vessels are necessarily constructed for heavy sea and deep water, and in approaching and navigating a ship-canal their movements would be so retarded that the cost of navigation would at once prohibit their use. In illustration of this point I refer you to the Welland Canal, twenty-seven or twenty-eight miles in length, now navigated by lake-propellers. You will find that the average time required to run this distance is twenty-four hours, with Lake Erie as a feeder, abundance of water, efficient management and good locks, qualities and characteristics in which our State canals are notably deficient.

It is generally conceded, that for cheapness, no mode for transportation can compete with a water route; and if, by any suggestion, mention, or experiment, we can materially reduce the time without increasing the cost, we have taken an advanced step in the progress and development of cheap transportation.

At present the models of our canal-boats seem expressly designed to prevent speed and to compel the employment of all the horse-power available. The boats should be constructed on an easy model. Locks and gates should be improved so that locking can be done in less than half the time now occupied. The management of the canals should command the closest care and attention, and the people of this city should especially take up the subject of canal transportation in earnest, with the view of securing, through the cheapness of transportation, the trade of the great West, and keeping it.

In conclusion, permit me, gentlemen, to add a few words with regard to the system of towing, which should recommend itself for adoption on the canals of this State.

Horse-power must be displaced by steam; and this is now done practically, profitably, with an increase of speed double that by horse-power, and a certainty of delivery. The Belgian system of towing, by means of submerged chains and cables, has been in operation for several months on the Erie Canal, between Buffalo and Lockport. Daily tows averaging seven hundred tons have been carried at a speed of at least three miles per hour, against the very strong current at Black Rock and in Tonawanda Creek. The receipts have been more than the expenses. The working of this system can be witnessed daily. It has elicited universal approbation from all, and has so successfully met every requirement of speed, economy and profit, as to more than justify the statement, that "steam on the canals" is an accomplished fact. Upon the results already obtained by the actual working, the following statements can be based. When the Erie Canal between Buffalo and Troy is fully equipped with the necessary towers and cable required in operating the Belgian system, the following great advantages over the present system will be realized: The time between Buffalo and Troy will be reduced to four days; the capital employed in canal transportation will be turned three times as often, the owners of canal-boats will receive three times the present amount of profits, the canal for the first time will be worked to its full capacity, (estimated by the State engineers at 18,000,000 tons,) and the State will either receive three times the amount at the present rates of tolls, which would pay off the State canal debt in two years, or reduce the tolls to one-third what they are now, and thus give, say, five millions each season to promote cheap transportation.

Can equal advantages be so quickly obtained in any other manner than by the complete equipment of the Erie Canal with the Belgian system, and thus fully utilize the greatest, cheapest, most reliable artificial means of transportation in the world, and secure to New York City the permanent benefits to be derived from the cheapest form of inland transportation?

Respectfully, yours,

M. M. CALEB.

B. B. SHERMAN, Esq.,

Chairman Merchants' Committee on Cheap Transportation.

BENJAMIN P. BAKER, chairman of the committee on terminal facilities, examined:

Mr. Chairman, our secretary informed me your committee desired information on our terminal facilities. So much has been said in regard to their being inadequate that it is likely it may have been inferred that our facilities were much inferior to what they are in fact now, to say nothing about the improvements in process of construction or in contemplation.

The subject of terminal facilities is a broad one, and embraces the storage and handling of all merchandise and produce arriving at or departing from this port.

Mr. Carlos Cobb, representing the Produce Exchange, who is also a member of this transportation association, has given you information in regard to the present manner of handling grain, and spoken of the desirability of having elevators constructed at the termini of each railway centering here to receive and store grain direct from the cars free for a given period, of sufficient capacity to store the receipts of seven days, which I fully indorse.

The grain warehouses on Long Island are fully sufficient to handle and store all the grain arriving by canal, or that will arrive by canal, should we succeed in increasing its capacity 100 per cent., and they are well managed by competent and honorable men. Perhaps they could hardly be excelled for location and adaptability for the purpose of taking grain from canal-boats or lighters, and delivery to ships lying alongside them. They can unload a canal-boat containing 8,000 bushels in three hours and load the same amount in a ship in less time.

Mr. Cobb referred to the lighterage system, and the necessity of "bulking" or consolidating small lots by having elevators at the railway termini, and the adoption of the "graded" system on grain that is to remain in store.

Fort Wayne sends to Toledo and Detroit wheat on account of the want of these facilities here to get the advantage of free lighterage by consolidating lots. They send one car to Toledo and it is sold in a lot that comes through and then lighters free. Many small towns do the same.

The present system of lighterage from railway to warehouse is objectionable; and, besides being attended by loss and risk, it causes delay and an unnecessary charge.

Lots of 10 to 30 cars, sold by sample or otherwise, can be put on board lighters and delivered to steamships as cheaply as from warehouse, for the labor is the same; but vessels that load entirely, or nearly so, with grain, receive their load by spouts directly from the warehouse, thus saving all lighterage charges.

If we had elevators properly constructed at our railway termini, we could save the lighterage on all transfers but steamer grain, and sometimes on grain to be shipped by steamer.

The railways centering here have yard and track capacity in abundance, but because the "bulking" system spoken of is not practiced, and

no warehouses ready to receive it, much delay is caused to, and by, small lots consisting often of single car lots; thus one or two cars may not only cause delay to the whole train of which it forms a part, but often to cars on the same track.

At present, large lots are lightered free, while one to four cars are lightered at $1\frac{1}{2}$ to 3 cents per bushel expense to shipper.

With the warehouse system perfected, and having grain inspected in cars on arrival and at once elevated or dumped into store, a train can be unloaded every 15 minutes, including the time necessary to switch into and out of position. There was formerly much opposition to introducing the grading system here, partly on account of the greater number of kinds received here than at any other point where grading is customary.

If we adopt the grading system, we shall, no doubt, be governed by the Chicago standard for Illinois wheat; the Milwaukee standard for Minnesota and Wisconsin wheat; the Toledo and Cleveland standard for Ohio and Indiana wheats. Buffalo would, likely, adopt the same grades, and then we would receive it at them at the elevators in Brooklyn, receiving canal grain as well.

The improvements now in process of construction are not all we want; but those in contemplation, such as building at railway termini of capacious grain warehouses, will inaugurate a system, when completed, which, I consider, will largely facilitate, not only the handling of grain, but greatly that of promptly returning cars to the West.

The improvements referred to, I shall ask to be permitted to refer to again, or ask you to listen to a report of Mr. Lees, made in the interests of the association.

Our facilities for handling tobacco, one of the important staples of the Southwest, are probably more perfect than those for handling most other staples, unless it be provisions, in which I can suggest no improvement for the present, inspection-yards for provisions being easily accessible, commodious, and well managed.

Our facilities for handling cotton have not improved for thirty years. I think the immense loss by stealage, by time, by samplers, weigh-masters, shipping-clerks, and cartmen, going from place to place with small lots, would be saved as well as all carting charges, by having warehouses on the water-front in New Jersey or on Long Island, where vessels could load and unload, or where lighters could bring to and take from the warehouses cotton to any railway station, thus saving it from all loss by plucking or damage by rain or snow.

Our docks are far behind the age, and the piers should all be covered, and a railway, for the convenience of moving products, should encircle the city at an elevation equal to the second story of the pier-warehouses. All the blocking of teams at receiving-docks would be avoided. Now, it not unfrequently occurs that from \$5 to \$10 are paid extra to cartmen to cover their time in waiting for an opportunity to discharge their loads.

In the matter of handling petroleum, one of our large staples, I consider the present facilities fair, except at the Pennsylvania terminus, where they are entirely inadequate, so far as regards shipping, &c.

Mr. Theodore F. Lees and Mr. Robert Taylor, who have, in the interests of the association, given the subject consideration, are present, and with your permission I will ask them to read their reports to the association for your consideration.

Mr. DAVIS. Did you refer to car or cart, speaking of \$8 or \$10 additional?

Mr. BAKER. Carts. There are only two or three centers for receiving

freight from the West down town, and sometimes there are fifty or a hundred carts waiting. By this system of an elevated road for them at the different points, all of that would be saved.

Mr. THEODORE F. LEES. Mr. Chairman, I have a report, made at the request of Mr. Baker, to ascertain certain facts in regard to certain facilities that were being improved or contemplated. It is as follows:

B. P. BAKER, Esq.,

Chairman Committee on Terminal Facilities,

New York Cheap Transportation Association :

In response to your request that I should furnish your committee with such facts as I might be able to command regarding the additional and improved terminal facilities now being actually constructed, as well as those projected or contemplated, by the several trunk-lines terminating at this city, I beg leave to make the accompanying report:

To aid me in procuring full information Mr. Thurbur, secretary of the association, addressed letters to R. C. Vilas, esq., general freight-agent Erie Railway Company; J. H. Rutter, general freight-agent New York Central and Hudson River Railroad Company, and to J. L. Gossler, New York superintendent Pennsylvania Railroad Company, who very kindly furnished me with interesting accounts of what is being done and what is contemplated by their several companies to improve the facilities for receiving and handling grain and other products at this point. As you are aware, we have no stationary elevators, and are, in the main, dependent upon the lighter and floating-elevator method of receiving and transferring grain. Although this method is behind the age, and is open to other objections, it appears there is no limit to the amount of grain that can be received and landed by the existing means. From the gentlemen referred to, representing the three trunk lines, I learn that, under the present system, grain can be received and landed more rapidly than the said trunk lines can receive from their connections and haul to this city. This fact conceded, not only directly refutes certain statements regarding our terminal facilities made by parties inimical to the interests of New York, but it is a powerful argument in favor of a new national double-track freight-road, and other projects advocated by the New York Cheap Transportation Association.

It also suggests the great economy in time and money attainable through improved terminal arrangements. The Erie Railway Company has for several years contemplated the construction of two large elevators, but have experienced difficulty in finding a site on their property that would furnish a proper foundation for such structures. Recently an eligible site has been discovered, and it is now probable that the Erie Company will soon commence work on improvements that will increase our storage-room for grain several million bushels.

The Erie Company has materially improved its facilities for west-bound traffic by constructing new and improved "floaters" for transferring cars, loaded on their piers in this city, to their docks opposite. They can now transfer 50 cars, thus loaded, daily, and propose to still further increase their capabilities in that direction.

Small lots and fractional lots of grain, often cause serious detention to larger lots and otherwise obstruct the general business of railroads. To obviate this difficulty somewhat, the New York Central and Hudson River Railroad Company is building a new pier at Thirty-third street, on the Hudson River, with grain-bins having a capacity of five car-loads to each bin, and with an elevated track from which cars can be rapidly unloaded. This improvement is to be completed before the close of navigation, and besides facilitating general business by relieving their track, it will, I understand, double this company's ability in handling grain.

The New York Central Company has also contemplated the building of an elevator, but has found difficulty in obtaining a suitable location on the Hudson River. Other practical considerations have caused delay in undertaking the enterprise. Mr. Rutter believes a general adoption of the grading system by the Produce Exchange will stimulate the construction of elevators. All concur as to the necessity for elevators which will enable an average train of grain-cars to discharge in from ten to fifteen minutes.

Much might be said regarding other advantages appertaining to the warehouse system, such as the creation of first-class collaterals in elevator receipts, but I do not know that such details are desired in the present connection. The Pennsylvania Company are constructing a new grain-track adjoining their new warehouses, which is an extension of facilities under the old or prevalent system.

From the foregoing you will observe that whatever improvements in terminal facilities are *actually being made*, are mostly an extension of a system which is already an obstacle to our commercial advancement. The improvements contemplated are of a desirable kind, and from the interviews had with Mr. Vilas, Mr. Rutter, Mr. Gossler, and others, I am convinced that the general feeling with railroad managers and with our

merchants, favors the speedy construction of first-class elevators and the adoption of the grading system in grain transportation. The aid and co-operation which the New York Cheap Transportation Association proposes to give through its several committees, is just what is needed to develop the desired improvements and bring our terminal facilities up to a first-class standard.

Awaiting further commands, I am very respectfully, your obedient servant,

THEO. F. LEES.

NEW YORK, October 16, 1873.

B. P. BAKER, Esq.,

*Chairman Committee on Terminal Facilities,
New York Transportation Association :*

SIR: In reply to your request for my opinion in relation to terminal facilities in this port, without stating in what particular, I concluded you referred to their mode of construction, operation, and commercial government, and reply as follows:

First. Of what should terminal facilities consist at the port of New York?

Edifices constructed entirely of iron should be erected at the extreme termination of each railway at the Hudson River opposite New York, of such length, width, and height as will best answer the purpose for receiving, storing, and discharging grain; and the means used for unloading the cars should be such as are adopted in Chicago, or an incline plane leading to the top floor of the warehouse under the roof, with switches and tracks, for either dividing the train, or leading cars to their proper locations for discharging their particular quality of grain. Such an arrangement, with a gate in the car-floor for discharging, would require but ten minutes to unload a train of 30 cars containing 10,000 bushels.

The grain thus discharged, might be discharged directly into vessels alongside the warehouse, or into bins containing the same quality.

Each warehouse should be provided with an elevating apparatus, for the purpose of elevating and cooling grain that may have become heated or "sweaty," or elevating it into vessels for shipment. The greater the distance grain is elevated, carried, and poured, the more thoroughly dry it will become. Grain undergoes several stages of "sweating," and when in this stage the best remedy for its preservation is elevating, which is much better for the grain than artificial drying by steam-heat, the latter producing a moist dryness rather than the dryness required to render it impervious to the influences of moisture. These warehouses should be at least 500 feet long and 100 feet wide—sufficiently long and wide to receive an entire train, and discharge it in ten minutes—and be provided with a wire rope for hauling the train up the incline, and to any part of the structure.

Second. When and where should be grain be inspected?

Preferably on the cars on their arrival at New York, and by the Chicago standard or classification, as this is now well understood, besides being satisfactory. A New York certificate of inspection, accompanying warehouse receipt, would satisfy buyers and shippers here, as well those who advance on bills of lading and warehouse receipts. In addition, one "shortage" would be saved to the shipper, for every time grain is moved it loses by abrasion and handling.

Third. What effect will the erection of properly constructed elevating warehouses in the immediate vicinity, and in the city of New York, have on the commerce of the country?

It will have the effect of encouraging direct shipments to this port of large quantities of grain and other products. Shippers in the West are aware of the advantages of direct shipment, and will gladly avail of the opportunity to do so as soon as the facilities in contemplation are completed. It would certainly be an advantage to a shipper to have his grain stored at a point where advantage could be taken of an advancing or a steady market, and of the opportunity to make an immediate delivery; storage, elevating, and shipping charges being the same here as elsewhere. Besides, by having grain here, it would tend to equalize the price of grain and freights; and the facilities for obtaining advances on grain in store are too well known to require comment. Warehouse receipts would pass as current in Wall street as a clearing-house certificate, as it would be backed by the very best security—a deposit of grain.

Large iron warehouses should be built on piers in the city of New York, the pier-floor of which should be open during the day to accommodate local city traffic, while the upper floors could be used for the storage of general and imported merchandise.

On account of the brevity of space along the water-front, the approaches to these warehouses should be by an elevated railway, so that all grain-laden cars could enter on the first floor, from which it could be elevated to the floors and bins above, or be sent directly into vessels along either side of the warehouse. These structures should be positively fire-proof, and be so constructed as to close the pier-floor at night and Sundays, and leave a certain space outside for access to ships. These elevated railways should pass entirely around the city, over the street next the river, so that freight-cars could be sent to any warehouse on the river-front to discharge

or receive freight, thus relieving the street of a large amount of haulage that now fills the streets with a traffic that should never pass through them.

The street railways should also be utilized for this purpose, as nearly all freight for city consumption, and for interior distribution, has to be sent to a general depot, rendering access thereto almost an impossibility, except at the sacrifice of much time, and consequently at great loss.

The terminal facilities for the receipt and discharge of cotton at this port are the same as existed fifty years ago when everybody was honest, and waste cotton could not be sold. The consequence is that a great deal of cotton is sent to Europe from southern ports, that would find its way here for sale and shipment, but for the large amount abstracted from each bale by the too-anxious samplers when in transit from one part of the city to the other.

What is desirable, and ought to be established, is the erection of a series of fire-proof cotton-sheds, two stories high, in a location quite removed from other commercial operations; for instance, on the shore-line in South Brooklyn. Cotton-laden vessels could either discharge at those wharves, or it could be lightered thither at a trifling expense.

By this arrangement all the danger incident to its conflagration would be avoided, as no fire would be used on the premises, consequently every fire, if one should possibly occur on the premises, would arise from spontaneous combustion or wilful incendiarism.

Its insurance would be much less, and its location would be known. Its sale would be effected just the same as at present.

If I have not alluded to the facilities for handling grain arriving by canal-boat, it is because they are about as perfect as desirable; as the canal-boat can convey its cargo to any point desired for discharging, while that arriving by rail must necessarily have an arbitrary movement, the price of which will be regulated by the competing canal and boat.

Terminal facilities at this port, for handling the products of the country, should be as convenient and inexpensive as it is possible to make them, as time is measured by a money standard only second to the capital required for their production and movement.

The recent agitation on the subject of transportation has been so widespread, that banking institutions and capitalists have decided on the inexpediency of locking up money, for periods varying from thirty to ninety days, in warehouses of the West, when, by a judicious expenditure of money in the erection of warehouses here, it can be kept in circulation, and thus prevent those stringencies in money which have periodically occurred since the production of grain for shipment to Europe has assumed such gigantic proportions.

Of course the influences of the Cheap Transportation Association are already seen in the movements that have taken place regarding terminal facilities, and by continuing its efforts in the same important direction, benefits will follow impossible of computation.

Very respectfully yours,

ROBERT TAYLOR.

NEW YORK, *October 16, 1873.*

MR. BAKER. I desired that you should know that we are at work, and although New York is, as they say, behind the age, we think it is not so far behind the age as is represented, and we mean it shall not be in the future. Our work in other lines, building this double track railroad is only advisory, as in this. We do not propose to build these places, but only to encourage them in being built. I beg leave to state that we hope to show to the gentlemen composing this committee to-morrow what facilities we have, and hear from the railroad officials their plans of improvement.

General SAMUEL ANDERSON, of the Board of Trade, Portland, examined.

The CHAIRMAN. The committee intended to have visited Portland, and failing to find the time to do so, requested that your Board of Trade would send a delegation here and favor us with their views on this general subject of transportation. We should be glad to hear any suggestion that you might be willing to make to us about it, either as to the wants of the people of your section of the country, or as to any suggestions that you may have looking toward relieving the people by cheap-

ening transportation. I will submit no questions, but leave you to make any statement you wish.

Mr. ANDERSON. I would say to the committee that I came away from home at a few hours' notice, having been in the country for some time, and had supposed, until the day I left, that the committee would visit Portland. I am, therefore, unprepared with the statistical knowledge which I would like to present to the committee, supposing that they would come themselves, and by observation obtain what we thought was very important information.

What we wished the committee to see was the position of Portland in reference to the trade and transportation business; its facilities for export; its relation to the northerly line of transportation from the West.

I do not propose to go into any question as to the necessity of additional means of transportation. I suppose that is urged very strongly from other sections of the country. Neither do I propose to go into any matter in regard to the cheapness of the water-communication as against the all rail; but we do know that the West wants the quickest and the cheapest means of transportation, not only to the sea-board of the country, but to the foreign countries; and if there is any section which affords that facility cheapest, and which in time can put it through with the most certainty the quickest, I suppose the committee would be interested to look at that point.

I, therefore, would suggest, first, the geographical position of Portland as compared with either of the other large cities, or either of the other places which have harbors prepared for the reception and the change of commodities. Then we take that geographical position, not only in reference to the receiving-but to the delivering for foreign consumption the grain of the country. In the first place we are half a day nearer Europe than Boston is, we are a day nearer than New York. We are within two hundred and twenty miles of what must be before long the interior water communication, that is to say, we are within less than two hundred and twenty miles of Burlington, and whenever the Caughanewago Canal is built and it is only a question whether this committee by their action shall bring it about early or whether it is left until capital without any other stimulus shall build it—it must be done and it will be done—and when that is got through steamers, laden to the capacity at which they are ever likely to pass through the lakes with the advantages of the canals now deepening, will land their cargoes at Swanton or Burlington. Either of them will be the termini of the road running through to Portland. From those two points the road is now building which, in two hundred and twenty miles, will take grain from anywhere on the Lakes and by that canal the two hundred and twenty miles of rail will put it on a wharf or wharves alongside of vessels with the water of 30 feet depth and rails now laid to many wharves, by which the cars loaded at Burlington or Swanton can come within ten feet of vessels of any capacity that are now run.

We have a harbor there that is deep enough for any steamer. The Great Eastern did talk of coming there once, but did not. We could have accommodated her; we can accommodate others. That point, then, gentlemen, is the point which we consider important—the geographical position of Portland. Your map will tell you that, of course, better than I can, yet I felt that it was so strong a point that it had still been overlooked heretofore.

In speaking of our city it has usually been rather contemptuously—that there was no object in looking toward Portland, or in the committee

going to Portland, as we were out of the line of everything, and merely a place, without facilities, and with a harbor frozen up off of the line.

Now, upon that point, as I understand that suggestion has been made, if you are acquainted—and some members of this committee probably are—with matters pertaining to railroad affairs of years ago, they will find that there was a contest between Portland and Boston for the terminus of the old Atlantic and Saint Lawrence, and Saint Lawrence and Atlantic Railroad; that it was pretty sharp whether it should be Portland or Boston. Of course Portland had no capital—it was poor—it was a town of 15,000 inhabitants, and Boston everybody knows. The committee met in Montreal. The Boston committee presented there an engraving, I believe, at any rate a picture, illustrating the enterprise of Boston in cutting out steamers through the ice. That point then was quite an important one for our people, who immediately proved to the Montreal people that there was no necessity ever to cut out ice for any steamer in Portland Harbor, and that was one of the turning points which brought the terminus of the Atlantic and Saint Lawrence Railroad—now the Grand Trunk—to Portland, because the harbor never did freeze so that a vessel could not go through. We do not have to cut the harbor out. It is never frozen. There are times when the inner harbor is skimmed over with ice, but there is no obstruction, and has been none, to the free access of vessels to the ocean: The question was asked, Why, so far north? It is for the same reason that the ice does not form in the ocean itself. We are within three miles of the open ocean, direct passage simply protected on its mouth by an island thrown across, which leaves an entrance each way, protected further in by one point of land running out which protects the inner harbor; so that, although we are within three miles of the open sea, it has a direct full action so far as the passage, without other obstruction than what is necessary to make it the safest harbor that there is upon the coast. It is just angled enough at the point completely to protect the harbor, but yet not to obstruct; so that the ice has no more chance to form there than out in the ocean, except, as I say, occasionally to skim over. As the tide comes in, it breaks it up ordinarily, and we have no difficulty. The best evidence, however, of the absence of any obstruction from ice is the fact that we have three or four lines of steamers seeking our harbor in the winter that during the summer go to Montreal.

We have a railroad around the city in a marginal way, by which, I say that any car coming in on roads already built, or which are projected and building, may be placed alongside of the wharf.

I am entirely disconnected and rambling with anything I may say in regard to this matter, for I am entirely unacquainted with the manner of procedure before this board.

The next point which I would make would be that in Portland we have no expenses in reference to our harbor. I would say that I should not be afraid myself to take any vessel and go from the open ocean into the wharves of our harbor. The access is so perfectly plain that a boy brought up in Portland, even if he has not been a sailor, knows it so well, and any sea-faring man who has once been in and out of that harbor has no fear of taking his vessel in without any pilot. It is but a short distance; it is direct; it is safe.

Then there are abundant facilities for warehousing—for elevators. I admit the fact that at present we are not prepared with elevators to do a business which we have not got. We have the places to put them, and capital enough to find those places if we had the business there; that is, the grain to transship. But there are no expenses connected

with the harbor, and no expenses, comparatively, connected with the transfer of grain from the points all around in our own city and immediately across the narrow bay that runs up on the opposite shore. We have plenty of water, 30 feet in depth, and a harbor there that as yet we have not begun to put wharves on, and yet there are I do not know how many wharves, quite a large number with the tracks down, and yet any quantity of land ready if there was any necessity for it upon both sides of this little bay to put any amount of wharf, warehouse, and elevator accommodation, and parties are ready to do it if the grain is brought there.

That is all in reference to the economy of the thing. It can be transhipped, if once brought, with no expense, because from the track it can be put upon the vessels. We have no lighterage, no harbor-dues, no pilotage, or any more than requiring payment of the pilotage if the pilot goes aboard of the vessel.

We have now one road, the Grand Trunk, coming into Portland from the West, besides our roads running east and west through Boston and to New York, and also our eastern roads. We have a road building from points that I spoke of on Lake Champlain through to Portland; part of it is finished in Vermont; seventy miles of it in Maine and New Hampshire are finished. It is about two hundred and seventeen miles from Burlington by that road through to Portland. It crosses a ridge of mountains, but it crosses where nature has been kind enough to make a gap, so that we get through with very little difficulty and at no very great expense comparatively.

The CHAIRMAN. What grades?

Mr. ANDERSON. Our grades on the westerly side will be 85 feet at the mountain; on the easterly side, 116 feet. We have the same grades that the Baltimore and Ohio Road has, and established by the same engineer who built that road. They have eleven miles continuous grade of 116 feet; we have less than seven, or about six and one-half, miles of 116 feet. Of course, at that point, which would have simply seven miles on one side of the mountain, and perhaps a like distance on the other side, there must be assisting machinery, or very heavy machinery for taking heavy freight over; but seven miles' elevation, going in either direction, is no very great amount of distance to have a heavy class of engines which now operates on heavy grades in other portions of the country, and which in two hundred and twenty miles distributed makes but very little difference to the cost of transportation—a mere trifle. If roads like the Baltimore and Ohio can be operated, as they have been for years, double the distance, we see no reason why, with that short distance, we may not operate successfully as to this.

As to the suggestion of snow and ice, it is like our harbor—we hear a good deal of it. We have run our road up where it is a great deal worse, up into the valley on the easterly side of the ridge. We have run there for the past winter, when all other roads were blocked with snow, and but once during the whole winter did we stop, and I think we were the only road in Maine that did so. I do not think there were many roads in New Hampshire, Vermont, or anywhere else in New England, and I rather think some in New York, that were not detained more times and lost more trips than we lost on our road; and yet with no very large amount of rolling-stock to handle. Formerly, it was the only route north to the sea-coast for Upper Vermont; until railroads were built, the Notch of the White Mountains, with Portland as its terminus, was the point on the sea-coast for all Northern Vermont; that is, substantially, I mean to say it was the route through there.

The men who traveled that are business-men to-day. When Boston bought up railroads, of course they took the railroad in preference to the old traveled road.

The testimony of those men who for years used this road is that the difficulty from snows was never at the Notch, where at the time when the snow begins to blow, which is immediately after the storm is over, and the wind shifts into the northwest, when the snow piles up and obstructs railroads and traveled roads, that then the wind blowing clear through this Notch made a perfectly good road right through there, comparatively, but that it was after they fell into the valley on the easterly side of the Notch, when they come to get into a more easterly direction of their road, that they felt the evil effects of the snow. Now, we have traversed that during the past year, and two years, in fact, what was substantially the same thing up into Conway, and have found not so much difficulty as has been found on almost every other road in New England, and even in New York.

Perhaps gentlemen may say that is mere assertion without reason. The reason of this is, as I tell you, that our road runs largely in a north-westerly direction, and any one who is familiar with the effect of snow upon roads knows that it is with the current, and that the drifts which pile up across a road are not the drifts which interfere with a railroad, but the drifts which come over and lodge upon roads, and which the roads running east and west are the ones that take. They will be stopped ten times where ours is stopped once, and they have had ten times the obstruction we have had.

Again, snow which is near the coast, which is farther south, as far as it can get and be snow, is damp, and when it is thrown into a track it packs in and is a great deal heavier and harder to be removed. In the light snows of a northern climate when they fall there is no difficulty. Until they are packed by the subsequent wind they can always be readily taken care of on any railroad. It is the wind afterward that packs, on an east and west road, the snow which makes the trouble. We do not apprehend any difficulty to our road at all about this. We apprehend, perhaps, an occasional delay of a day.* We had just one obstruction, I say, last year, and none the year before, which of itself is the best evidence upon this point.

I have a few statistics that were sent me by the secretary of our board of trade, which I would like to submit. They were sent by him and are vouched for by his signature.

Mr. Anderson here read as follows:

Portland has a weekly line of steamers to Europe for six months in the year of about 3,000 tons each, some exceeding 4,000 tons. A fortnightly line, also, known as the Dominion and Mississippi line, consisting of five large steamers of 2,500 tons; the Glasgow line of freight-steamers; the (occasional) line of freight-steamers to London, all of which brought upward of \$40,000,000 worth of merchandise to this port from Europe last year.

Sixty-five railroad-trains leave and enter the city daily, having a connection with nearly all the roads in New England.

Portland has unlimited facilities for moving and transferring freight, as cars pass on to about all the wharves, where ships of the largest capacity can lay afloat with 30 feet water. Her marginal railway around the city is nearly five miles in extent. Elevator capacity, 150,000 bushels grain; other warehouse capacity, 450,000 bushels grain; elevator-transfer capacity, 30,000 bushels daily; other transfer capacity unlimited. Ten thousand four hundred and forty-seven foreign entries merchandise was made at Portland in 1872.

Maine is building this year 43,745 tons ships—more than double the tonnage built in all New England last year. Maine has about 2,000 miles railroads, to which 119 towns, with a population of 278,437, contribute directly to its local business, all of which centers in Portland. The banking-capital of Portland is \$3,500,000; deposits in

savings-banks, \$8,720,153; products of her manufacturing industry, \$9,000,000; sales of merchandise, \$40,000,000; valuation of the city, \$29,821,012.

Facilities for building cars, locomotives, and steamers are ample for present demand. Railroad-iron is made to quite a large extent, both iron and steel rails.

Portland is a half-day's sail nearer to Europe than any other port in the United States, and a day nearer than New York. Her harbor is free from obstruction by ice at all times.

Yours, truly,

M. N. RICH.

We are really the outlet of the northern route. We are nearer than the Grand Trunk, a shorter distance to the lakes, and a shorter distance to Montreal than by the Grand Trunk some forty miles. We are the principal point as the point of departure, geographically, for all that northern lake region.

Now, while gentlemen may think that the Caughanawaga Canal, or any improvements that can be made there, are in the interests of another country, yet it seems to me entirely different. It seems to me as if this transportation to the center of the country was well provided for now; that it is strong in every way. New York is strong; the central routes are strong. It is the outside point that, it seems to me, Congress should pay some attention to strengthening, if possible; that in the farther southern points, perhaps, and more northern, attention should be paid. It seems to me that this line through the waters of the lakes, and through to the nearest point to Europe on our own territory, is of importance. Now, the West will hold that water-communication; they will transport over that; it is the cheapest outlet they can ever have. The West is bound to hold and to protect that water-communication, and the question, as it seems to me, is whether that business shall be done. The passage over the water is of no consequence; it adds nothing to any body, whether it shall be done by Montreal, and pass out the imports which come back with the steamers always making Montreal their headquarters, and the vessels which make that export take the grain from the lakes and Saint Lawrence, whether Montreal shall do the great business of the West, or whether it shall be done down east somewhere, I feel really perhaps ashamed to say Portland, because it looks as though we were magnifying a very small town, but at the same time standing, as it were, at the very gate, we perhaps appreciate, or think we appreciate, our position more than people elsewhere.

But it seems to me as if either Montreal or Portland must, in the future, be the point at which this great product of the Northwest must find its way out, and, therefore, it seems to me as though this Caughanawaga Canal shall be the side-track upon which you switch off the business from the lakes, and bring it down on to American territory, and take and transport it and export it, and receive in return the imports. It must be by that switch, if we shall take that freight off and bring it down to it, rather than have it go through to Montreal and pass out in their vessels. I was in Montreal a short time since, and talked with Sir Hugh Allen. Of course, I am interested in railroads. Well, he is interested in railroad-matters up there somewhat, and has some large interests on his hands, such as the steamer-interest. He owns a line of steamers running into Portland in winter and Montreal in summer. I asked him if our road was built whether we might feel sure of his steamers staying in Portland. Boston was making an effort to get the steamers there, and we have nothing, except our position, with which to contend with any other place. It is our whole means of offense and defense. He said that our facilities in Portland were such that all we had to do was to get the means of transportation, so as to bring the

grain out of the West there, and we never need be troubled about him or his steamers; that if he did not have them there others would. The place of itself would command the means of transportation of any grain or any products that we could lay down in the city of Portland.

It is upon that fact that I would claim, if I might make any claim, that as a national thing the United States, to protect the trade and hold the trade for our own country, and in our own borders, should give that outlet upon the Saint Lawrence to the vessels loaded with grain which are finding their way, and will find their way, through the Saint Lawrence. When it gets to that point, it must go to and be handled at Montreal, and shipped from there, and no vessels coming back will bring back importations for the West, or else it must be aided in getting down into our own coast.

The CHAIRMAN. Your idea, then, of the cheapest mode of reaching England is by the Saint Lawrence and the Caughanewago route?

Mr. ANDERSON. I think it must be as a water-communication. It is much cheaper than any rail can be.

The CHAIRMAN. What is the distance from Boston to Burlington or the nearest point on Lake Champlain?

Mr. ANDERSON. From Boston I think it is twenty miles farther. I think it is about two hundred and fifty miles from Boston to Burlington.

The CHAIRMAN. This Caughanewago route is entirely on Dominion territory, I believe.

Mr. ANDERSON. Well, I suppose we may use that where it is for our interest as well as their waters.

Mr. SHERMAN. Have you any report or documents of the Grand Trunk Road that would show its capacity?

Mr. ANDERSON. I have not. They have about twenty trains a day coming into Portland over that road.

Mr. SHERMAN. What is the length of that road in comparison with yours?

Mr. ANDERSON. We should strike Montreal forty miles or less than they. We strike to Ottawa. There is a line projected, and will be built—twenty-four miles of it being already built—running from Ottawa this way, some twenty-odd miles, I think, above Montreal. They have made a thorough survey there of the river and of the whole route. They can build a bridge across there for about \$1,000,000, as against the Victoria Bridge costing \$7,000,000.

Mr. SHERMAN. Across the Saint Lawrence?

Mr. ANDERSON. Yes, sir; they will build one for \$1,000,000. That road will undoubtedly be built, and make connection at about the same point—the outlet of the Saint Lawrence. Our road, in that connection, would cross the Grand Trunk, and I think it would be about sixty to seventy miles nearer to Portland.

Mr. SHERMAN. What is the distance from Portland to Montreal by the Grand Trunk?

Mr. ANDERSON. Three hundred miles, I think.

Mr. SHERMAN. How does that transportation in bond work from Portland to Montreal; is there any difficulty?

Mr. ANDERSON. I never have heard of any difficulty.

Mr. SHERMAN. Goods are landed and transported without going through the custom-house?

Mr. ANDERSON. Yes, sir; passed right along.

Mr. SHERMAN. How are they identified?

Mr. ANDERSON. Put under lock by the custom-house officers.

Mr. SHERMAN. Yes ; they are there delivered in unbroken cars.

Mr. ANDERSON. Yes, sir ; it is all under their instruction.

Mr. SHERMAN. Does it pass through warehouses ?

Mr. ANDERSON. It passes immediately through. The cars are locked up by the custom-house officer in Portland who superintends the breaking bulk, &c.

Mr. SHERMAN. Have you heard of any practical difficulty, any cases of defrauding the revenue ?

Mr. ANDERSON. I never heard anything of the kind. I think there has been no report published of the other end of the road we are building. You see the part that we undertook to build was from Portland to the Connecticut River through the States of Maine and New Hampshire. We did publish a pamphlet upon that road, which I will forward for the use of the committee.

Mr. SHERMAN. What is the extent of business done on the line from Portland north ? I mean the road from Portland to Nova Scotia.

Mr. ANDERSON. That is the European and North American. I have no statistical information in regard to that line.

The CHAIRMAN. You do not know whether there is any international trade ?

Mr. ANDERSON. O yes, sir.

Mr. SHERMAN. What are the chief elements of that trade ; lumber ?

Mr. ANDERSON. No, sir ; not on that European and North American road.

Mr. SHERMAN. Are there any imported European goods coming down over that line from Halifax to Portland ?

Mr. HUSSEY. No, sir.

Mr. DAVIS. I infer from what you said that your route would be made up of rail and water. Have you considered the relative cost per ton per mile of rail and water ?

Mr. ANDERSON. No, sir ; I am not an expert.

Mr. DAVIS. Can you give us any facts that now exist in that regard ?

Mr. ANDERSON. No, sir ; I am not an expert at all on that. I take it from other men's calculations as to the relative cost. I am simply a railroad-man.

Mr. DAVIS. Perhaps your judgment, whether you are an expert or not, would be worth something ?

Mr. ANDERSON. No, sir ; I have not the means of making a judgment. I could not stand any examination on that point at all. I really do not know except as I read.

Mr. DAVIS. Do you know whether there is a rate established between the water and the rail ; if so, what is it ? What is the cost relatively, if any, of the route *pro rata* ?

Mr. ANDERSON. I cannot tell you what that is. I am not in connection with them, and therefore I have no practical knowledge.

Mr. DAVIS. (To Mr. Hussey.) Have you knowledge on that point ?

Mr. HUSSEY. The cost per mile per ton by water is less than one-half.

Mr. HUSSEY, of the Board of Trade of Portland, Me. Mr. Chairman, we came here as representatives of the Portland Board of Trade, and, of course, do not represent Portland or Portland Harbor alone, and do not purpose to do so.

Perhaps no State in the Union is as much interested in this question of cheap transportation as the State of Maine, because we are a lumbering and a ship-building people. Consequently, we want this produce of

the West at the cheapest possible rates. We are consumers and not producers of grain, provisions. That is an important point. Consequently, when arguments have been presented by my associate, it is with a view to help aid the business of the State of Maine as one of the States of the Union.

General Anderson has spoken of pilotage. I would say, having been a long time connected with the board of trade, that the board of trade are authorized by the State, among other matters in Portland, to appoint port-wardens and pilots. The question has often come up in relation to pilots, and we have never appointed them, for the very reason that it is not deemed essential to have pilots; at least we do not want to have compulsory pilotage, to say the least, and the sentiment has been very strongly against it, because any person with a very slight nautical knowledge can navigate any vessel into Portland, so close are we to the open sea. There is no difficulty whatever in bringing any class of vessel into our harbor; and, when in the harbor, although I would not talk about it, because it has been talked about so much that it has become, perhaps, a by-word, but it is known to all the members of the committee that it is one of the very best harbors in the country, with the deepest water and the best protected.

The British provinces have been spoken of. A large amount of business is done there. Not only does Maine want this cheap transportation for the consumption of her own State, but we want it for transport to the British eastern provinces, as making a large business. A large business is done between Portland and the lower provinces. We are interested as transporting the products of the West to the eastern purchasers, New Brunswick, Nova Scotia, and Prince Edward Island. The largest part of their consumption, and I may say almost the entire consumption of grain and flour and provisions, now goes into Portland by the Grand Trunk, and is transported to the eastern provinces.

Mr. SHERMAN. That is carried by water?

Mr. HUSSEY. That is carried by water.

Mr. SHERMAN. You do not carry that by rail?

Mr. HUSSEY. No, sir; it comes from the West as being the cheapest mode of getting it to the eastern provinces. Portland is the best point to which to bring the western produce for the eastern provinces, and so it is also for Liverpool. The business of Portland is done very cheaply compared with other cities. When we are as large as New York it will undoubtedly cost as much as it does here, but now the expense is very small; every charge is small. Although we now have no grain-elevator, it having been burned this summer, our piers are long and numerous. There are thirty or forty of them where a great amount of shipping can ride safely, and this grain can be transferred very easily from the cars into ships, or into warehouses on the piers. Every pier is equal to an elevator.

Mr. DAVIS. What is the cost to ship now?

Mr. HUSSEY. The cost would be very trifling, indeed. The exact cost I could not give you, but it must be very small. It could not be half a cent a bushel.

Mr. SHERMAN. Done by spouting, I suppose?

Mr. HUSSEY. Yes, sir.

Mr. SHERMAN. Do you elevate it at all by steam?

Mr. HUSSEY. As I say, we have no elevator.

Mr. SHERMAN. It is just spouted into the vessel, I suppose, from the car?

Mr. HUSSEY. Yes, sir; it goes along so closely to the line of the wharves and the stores that it is handled very easily.

We are differently situated than perhaps almost any other place. Our principal business-street is broad, a hundred feet wide, and runs in front of all our wharves through the city, the entire length of the harbor, connecting the Grand Trunk Railway with the railways going west—to Boston and west. From this railway running through the center of this broad street, they have tracks from this main track running down on to all the piers; so that in each of these piers the freight is brought in and the cars are switched off on to the piers, and there the cargo is discharged—lumber, grain, produce, &c. We have very ample facilities there for a very large business, and are at present doing a small business. We have pretty enterprising people, and they want to do more.

We have, in addition to the foreign steamers—the English steamers, which my associate (Mr. Anderson) referred to—a line of three steamers of about 1,200 or 1,500 tons each, that are run all the time to the eastern part of the State, to Eastport, and Saint John, New Brunswick; and we have also a line of steamers to Halifax. They have had three steamers, and have now two, one having been burned at the wharf this summer. We have also other steamers, which run to the other points in the eastern part of the State of Maine, which transport a great deal of this western produce. It will be seen, therefore, that Portland is a large consumer of this western produce.

Mr. DAVIS. Can you give us the statement of how you prorate between water and rail?

Mr. HUSSEY. I can say it now, so far as the communication we have opened. Do you mean from Portland east?

Mr. DAVIS. Anywhere where rail and water prorate. I would like to know what it is.

Mr. HUSSEY. It is about one-third of the cost by water of rail.

Mr. DAVIS. Can you give us about what point, from what point; the figures I mean?

Mr. HUSSEY. From Portland to Halifax and Saint John; to any connections with the railway in the provinces.

Mr. ANDERSON. Do you not prorate with Boston roads?

Mr. HUSSEY. We do sometimes in the winter.

Mr. DAVIS. Will you give us what that is, if you can?

Mr. HUSSEY. About one-third is the proportion.

Mr. DAVIS. Then I understand it costs two-thirds less by water—as one is to three, water and rail—do I?

Mr. HUSSEY. Under similar circumstances. There are cases, you know, where the matter differs. For instance, you take a short-line rail and a long line of water-communication, and then the rail necessarily wants a larger proportion, and *vice versa* with a very short water-communication and a long rail-communication. The expense of handling the goods for a short distance would be the same as for a long.

Mr. DAVIS. Leaving that out of the question, my object is to get the relative cost by rail and water, everything equal. That, I understand you to say, would be one-third on water and two-thirds on rail?

Mr. HUSSEY. Yes, sir.

Mr. SHERMAN. Can you give us the cost of transporting a bushel of wheat from Montreal or Burlington to Portland now by the Grand Trunk Road from Portland to Montreal; what is the cost per bushel or the cost per ton per mile either way?

Mr. HUSSEY. I do not know the Grand Trunk rates, sir. It is about 40 cents a barrel for flour.

Mr. SHERMAN. That is two hundred and some odd pounds?

Mr. HUSSEY. Yes, sir.

The CHAIRMAN. Flour is always cheaper by rail than wheat.

Mr. SHERMAN. You do not know, however, what they charge?

Mr. HUSSEY. No, sir.

Mr. SHERMAN. (To Mr. Anderson.) Have you ever made any estimate about what you could transport for on your road from Burlington to Portland?

Mr. ANDERSON. No, sir; we have never looked. This matter is yet entirely new. As I say, I came here at a very few hours' notice, and somewhat unprepared.

Mr. DAVIS. (To Mr. Hussey.) I understood you to say you were running a line of boats, and the figures you give us are your experience?

Mr. HUSSEY. Yes, sir; I am interested in a line of boats.

Mr. SHERMAN. For about five months of the year they cannot run with boats up into Montreal, but you say you can run into Portland all the time?

Mr. HUSSEY. Yes, sir.

Mr. SHERMAN. In the summer-time they transport produce more cheaply from Montreal to Liverpool than from Portland?

Mr. HUSSEY. Their return-cargoes are destined for Canada—for Montreal. Importations by Montreal are made through these lines of steamers, and they run in there. It is their home. They come to Portland and send their goods to Montreal over the rail received during the winter. It must be remembered that we are a small town.

This point in regard to the harbor in winter is a very important point. We are unobstructed through the winter. Now, taking the harbor of Philadelphia, the river is obstructed by ice in the winter, interfering with business. The river here at New York is, on both sides, often very troublesome, from so much floating ice, and we are less obstructed than almost any shipping-port.

Mr. SHERMAN. How is it with the Boston Harbor; is that open?

Mr. HUSSEY. Yes, sir; that is kept open all winter, but it is more obstructed than Portland Harbor.

For the purpose of importing goods from Europe to the West, we have advantages there over almost any other place. If goods come in, we are not crowded; our rivers are not crowded, and these steamers come up to a pier and land their goods from the steamer directly into the cars for the West. And oftentimes goods reach their destination West, arriving in Portland, before you can get them through the custom-house in New York.

Mr. ANDERSON. We can lay them down in New York as quick as a merchant can here through his own custom-house. We can bring them here into the city of New York as quickly as that.

The committee adjourned.

NEW YORK, *October 18, 1873.*

The committee met pursuant to adjournment.

HORACE H. DAY. When I had the honor to appear before the committee at its former session in New York, I was constrained to close my remarks before I had got through, upon the entrance of the committee

of the legislature, and omitted to emphasize two points which I deem of great importance to the general subject—one in respect to terminal facilities; the other in connection with the enlargement of the Erie Canal.

I referred to a method which had been discovered by me whereby canal-boats could be lowered from one level in the canal to another without passing down the water from the upper level, and thereby rendering wholly unnecessary any enlargement of feeders or reservoirs. Indeed, by this system the capacity of the Erie Canal, or any other canal, may be increased twenty-fold, without any additional increase of water. A very large proportion of the cost of the Erie Canal is embraced in the feeder-canals and reservoirs, which, by the old system, every boat passing through takes from one level to the other a lockful of water, and by that system the present supply is insufficient if the carrying capacity of the canal should be required to be doubled. By my system two locks would be necessary at every change of level, and in them would be suspended iron cases, in form corresponding with the locks now in use. One of them would be suspended in one lock and the other in another lock by the side of it, and by wire cables attached to each, as one descended the other would ascend, and the lock thus constructed and operated would take up as much water every time as it took down, and hence none would pass through the canal. The cost would be comparatively trifling, and thus a great saving be made.

Now, in respect to terminal facilities, it is well known that the cost of land in or about large cities is so great that it has occurred to me that grain-depots might properly be located, say at Whitehall, should the route of the ship-canal from the West extend to that point, where land is very low, and where, by a proper system of elevation, the train of cars might come above the depot which held the grain, or granaries, allowing the grain by its gravitation to fall into it, and thus a large quantity, within a short distance of the city by rail, might be stored through the winter; and when a vessel coming from abroad required a cargo to return, this grain could be delivered within one or two days from these granaries directly on board the ship, by a proper system of elevated railroads extending over each pier or dock, and thus render wholly unnecessary the large expenditures and costly structures in the crowded cities. The grain thus stored could be made available for a turn of capital while in storage by certificates, which would be current in the financial centers. I make these suggestions lest they might not have occurred to the committee or to others, and ask their consideration.

I understand the committee propose to examine the route from the Ohio to the James River—the Kanawha Canal. The system of canal-boat elevation, or steamship elevation, as spoken of by me, is equally applicable in passing vessels over the Alleghany Mountains; and the extreme expense of a tunnel, which would cost, perhaps, eight or ten million dollars, might be avoided, and inasmuch as the question of the success of a canal across the Alleghanies has always been the question of water-supply, it will be manifest that if the quantity of water on the upper level does not require to be locked off, then only a sufficient supply to provide for evaporation and soakage will be necessary, and it might be even cheaper to pump the water up from water-courses below the summit to keep the canal full, than to attempt to construct reservoirs upon the summit of the upper levels. It is a question of dollars and cents. The cost of a steam-engine of proper construction for raising water is well known to engineers; a matter easily calculated, how much

water would be required from week to week to supply the amount lost by evaporation and soakage; and inasmuch as many persons, in common with myself, believe that the true system of vessels to pass from the Ohio to the James would be not less than 600 tons, wide flat-boats, propelled by steam, which also are fitted to navigate the Ohio and Mississippi, and other contributing rivers, I desire the committee, in surveying the whole field, to consider the great economy which would result from the adoption of this system for that canal, by greatly lessening the cost of going over the mountain, leaving the more money to expend in enlarging the general canal itself. With vessels thus loaded at the depot-cities on the Mississippi and tributary rivers, passing without transshipment through to Richmond and the James River, but one handling would be required; and the same route would also accommodate a large amount of coarse, bulky goods required to be passed from the sea-board to the West, and as this route will be open ten or eleven months in the year, if not the year round, greater facilities of commerce between the East and the West could be enjoyed by this middle route than could be even by the route through the lakes and Champlain, or the Saint Lawrence, as suggested by me in my former remarks to the committee.

If the financial calamity now general over the country should throw out of employment, as it most likely will, a million of men, it will be a serious consideration for the Government whether they cannot be employed in building these structures, and thus, while providing for the future, serve also the present, averting the calamity which the idleness of a large number of men might possibly call upon the country.

If these canals or railroads should be commenced at once, in my judgment, they could be built by the issue of United States bonds convertible and reconvertible, bearing a rate of interest not exceeding 3.65 per cent., making these bonds inter-convertible with certificates of indebtedness, to be issued by the Government, corresponding with our present greenbacks in denomination, and these certificates of indebtedness be made a legal tender for all purposes in the United States. By this system we could give to investors a perfect security, guaranteed alike by the Government of the United States and by the revenues derived from these canals and internal improvements, and at the same time provide for a large population, idle, suffering, perishing, and, with all, inaugurate a system of finance, to which, sooner or later, the country must come, as, with our large foreign indebtedness, we cannot expect the restoration of specie payments for a long time.

NEW YORK, *October 18, 1873.*

G. R. BLANCHARD, second vice-president Erie Railway Company, examined:

By the CHAIRMAN:

Question. State your connection with the Erie Railroad Company.

Answer. I am the second vice-president of that company at the present time.

Q. What has been your business for several years past?

A. I had been acting in the capacity of general freight agent of the Erie Railway Company for one year before I was made the second vice-president. Prior to that time, for eight years, I was general freight agent of the Baltimore and Ohio Railroad and its leased lines, and

before that I was general freight agent of the Ohio and Mississippi Railway.

Q. What, in your judgment, is the effect upon transportation of the various non-co-operative freight-lines known as fast-freight lines and others?

A. I have had a great deal of experience in connection with this system of fast-freight lines. At the time I was general freight agent of the Ohio and Mississippi Railroad the system of fast-freight lines had just commenced. The subject being submitted to our people, I at that time reported positively against it, believing, as I now do, that it was unfair both to the stockholders of the railroad companies and to the producer and consumer of the property transported. The reason for that is that those companies have been organized upon various foundations and bases, all of which arrive at the same object, some of them by more circuitous means than others.

The different forms of fast-freight lines which have prevailed over the different trunk-lines have been three in number. The first form that was adopted and used, I think, originally, by the Erie and New York Central Roads, was a system by which they gave chartered or organized companies or associations of individuals a contract which was at so much per car between the points of origin and delivery of the property. That price per car was usually based upon an average of the rates on the four different classes that might prevail from New York, Boston, Philadelphia, or Baltimore to the West. The result of that form of commission was that it at once made the upper classes, as they are called by railway-men, more valuable than the lower classes, and offered inducements to the owners of these companies to solicit the upper classes only. For instance, to explain my meaning more clearly, we will assume that the rate from New York to Cincinnati was \$1 first class, 80 cents second class, 60 cents third class, and 40 cents fourth class. Assuming an average of these classes upon the graduations of tonnage to be 70 cents, without figuring it, all the property that they could get at a dollar gave them a profit of 30 cents for 100 pounds. All the property they could get at 80 cents paid a profit of 10 cents a hundred pounds. A profit of \$6 a ton on dry-goods between here and Cincinnati was equivalent, upon a car of eight tons, to \$54. The result of that large premium upon the rate was that the buyer of the property paid actually to the railroad company a rate of 70 cents, the public paid a dollar, and the stockholders received 70 cents. In that way the railway companies were permitting a class of middle-men to stand between the interests of the public and their own, which has had a great deal to do with the system of speculation and fraud which has crept into the railway management of this country. That was one of the forms.

I have known east bound where a contract was given on the basis of 20,000 pounds at fourth class—the basis differing between westward and eastward freight, because nine-tenths of all our tonnage eastward is in fourth class and flour. I have seen men load at various points in the West, and I recall some cases. At Indianapolis was a car on which the Car Transit Company paid to the railway companies on the basis of 20,000 pounds at 50 cents from Indianapolis to New York. They would crowd into that car 22,000 pounds of provisions, and fill the top with wool, or broom-corn, or such other freight as they might get on, and they would charge 75 cents, 80 cents, or a dollar a pound on the light freights, the 2,000-pound margin between the 20,000 pounds which they paid for, and the 22,000 pounds which they loaded, being a

10 per cent. item of profit, and, added to that, the entire receipts which they secured from the broom-corn or wool, as it might be, was another additional item of profit, which they received, and for which the railway companies and the stockholders of these companies received not a penny. In addition to this, these car contract companies had contracts with the railway companies, by which the railways paid them a mileage for the use of their cars, varying from a cent to two cents a mile run, whether the car was loaded or empty. When some of these officers of these fast-freight lines have approached railway companies, for the purpose of inducing them to join this system of business, they have shown us that their mileage receipts would pay the wear and tear of the cars, and ordinarily the expenses of their agencies, so that the money which the carriers paid, or, more properly speaking, allowed to be collected by these specific contracts, was practically a clear sum to this stock company which run those fast-freight lines. That was the first form of fast-freight lines, and was the original form as I now remember it.

Stockholders of several of the western railway companies, particularly, believing that that form of compensation was excessive and unjust, modified it so that another form became the favorite both with railway companies and with these fast-freight lines, and that was a system by which a large percentage of the earnings of the railway should be paid to those companies for the purpose of securing this business. These percentages have ranged from 15 per cent. upon first, second, and third classes westward bound, 10 per cent. upon fourth class, and 8 per cent. upon special, down to 10 per cent. upon first, second, and third classes, and 5 per cent. upon fourth and specials, all those figures being west-bound. East-bound, the percentage has been 12 per cent. upon first, second, and third classes, and 10 per cent. upon fourth, and 8 per cent., in some cases, upon flour. The effect of that has been that, if a railway company charged between Chicago and New York a rate of 60 cents per 100 pounds, and 10 per cent. of this sum went into the hands of this company, the railway company received 54 cents, although the public paid 60, the margin of profit going to pay the cost of agencies, offices, and expenses, dividends upon stock, representing, in a great many cases, the value of the cars which they had put upon these lines and the good-will which they usually paid for to some company that had had private fast-freight line contracts under the charter system prior to the inauguration of this. In one case I know of a large sum having been paid by a company organized upon the latter plan for the good-will of a company that had existed under the first plan I have told you of.

The effect of the second plan was, in a great many cases, as bad as that of the first, because the profits which they lacked under the second as compared with the first system were very often made up by a system of scalping, by which, at an intermediate point in the line, a sum of money was taken bodily out of the rate and given to this company in addition to this percentage commission. For instance, from Memphis, we will say, cotton was brought to New York at the rate of \$1.25 per 100 pounds. The price of that per bale from Memphis to Cincinnati being a dollar, would represent 20 cents per 100 pounds, assuming a bale to average 500 pounds. In a great many cases that have come under my observation in past years, but which is effectually checked at this time by all lines, these fast-freight lines would bring the property forward from Cincinnati at 80 cents, while railway companies were entitled to a dollar, and the margin of 20 cents between what they paid the boats and

what they collected from the railways was also put into the treasury of those fast-freight lines and made up another source of their profits.

The commission system was also subject to abuses in this, that property that ought not to have gone into these contracts, and which was transported between the non-competing points, would get into these cars and be manifested as competitive freight, and the railway companies would lose the commission so paid or forcibly collected upon business which they ought not to have included at all. Therefore, a rate of a dollar under that plan from here to Chicago would really pay the railway companies 85 cents, and the firm, individual, or corporation at Chicago pay a dollar, the 15 cents became the margin of profit out of which agency and other expenses were paid upon first-class goods, differing upon the other classes as the rates might differ. The sum total of this percentage has made very large profits for some of these fast-freight lines. I have found this system of commission fast-freight lines prevailing in two lines via the Erie Railway when I became connected with it; and availing ourselves of the privilege we have in both contracts to terminate them next spring, we have given them notice, and it is our intention to put both of these lines on the improved co-operative basis. Another form of fast-freight lines, which prevailed only to a very limited extent, however, was to allow such companies the margin of profit they could secure over fixed rates per ton per mile, relying upon competition to prevent excessive charges against the public.

The third form of fast-freight lines, which has latterly prevailed, is the co-operative. I may state that the most recent one that has been organized is, perhaps, the Great Western Dispatch Company, in which our own company, the Lake Shore, the Cleveland, Columbus and Cincinnati, the Atlantic and Great Western, the Toledo, Wabash and Western, the Indianapolis and Saint Louis, the Ohio and Mississippi, and a few lateral lines have become parties. We have recently had a form of co-operative contract up for discussion which has lasted for some two months. We availed ourselves of what we believed to be the best forms of organization of all these fast-freight lines under the co-operative plan, and took from them what we believed to be all of the good points and left out those which were unfair either to the public or to our stockholders and owners, the result of which is that that line is to be organized upon the basis of a contract now in print, and it will give me pleasure to submit a copy of it to you. By it the railway companies choose from among their officers each a director, and usually these directors are chosen from officers outside of those who have the immediate direction of the freight business of the line. We then agree that each railway company will set aside a certain number of cars, usually based at the start upon a mileage arrangement, our own company, for instance, contributing one per mile. At the expiration of six months, when we shall have arrived at a basis of earnings, we meet any deficiencies to that equipment in the proportions in which each company has earned of the gross earnings of the line for that period. In that way, if the Erie Company should have received 65 per cent. of the gross earnings of the line for six months, we would contribute 65 per cent. of any additional equipment that should be needed. After this equipment is perfected and placed upon the line, we then choose a general manager for expediting the transit of the business, for the prompt settlement of overcharges, losses, damages, and as a neutral representative to settle questions impartially arising between railway companies over which, if left alone, they might differ, and so delay any proper and fair

adjustments. The manager usually has the movement and direction of these cars upon the different lines, and he attends to the prompt settlement of all things in the movement of property, having, however, no option whatever in the making of the rates upon the property. He is simply to attend to its movement. He selects such assistants or agents as may be required from time to time to give the line prominence and efficiency at the different centers to and from which the property of the line is transported. The accounts are then adjusted monthly. The general freight-agents of the companies usually constitute a board of audit. The actual expenses which may have been incurred each month are certified by the general manager to this board of audit, accompanied by the necessary vouchers. They are then divided among the different companies, in the exact proportions in which they have shared in the receipts of the line for the corresponding period. The expenses of each company are certified by all of the board of audit, and those certificates constitute drafts upon the treasurers of the respective railways for the expenses, which are paid upon presentation. In that way the expenses of these co-operative lines are reduced very much below what the railway companies paid under either of the old systems for similar service.

We have here on our own line parallel cases, which show how much more just the co-operative form is, to both the owners of the property and the public, than perhaps any other that could be drawn. Under the contract made by Mr. Gould for the Great Western Dispatch Company, which is the second form I have spoken of—a commission line—we have paid to them 15 per cent. upon the first three classes west-bound, and 10 and 8 upon the fourth and special classes west-bound. We have also paid 10 per cent. upon the upper classes east-bound, and 8 per cent. upon the lower classes east-bound, although a portion of the receipts were returnable to the railways in dividends. Running parallel to that line to Chicago, the Erie and North Shore Line was organized two years ago this fall, upon the completion of the Niagara Falls branch of the Erie Railway. Mr. Joy, the president of the Michigan Central Road, being an economical and fair manager, and having the interests of his stockholders and the public much more at heart than Mr. Gould is ever regarded to have had, demanded that the co-operative form of line should be made, and the Erie and North Shore Line has, during the year which I have been immediately supervising the freight-traffic of the Erie Company, been running parallel to the Great Western Dispatch. The average which the Great Western Dispatch has deducted from the Erie Railway earnings has been in the neighborhood of 9 per cent., (although we do share ultimately in a dividend,) while the North Shore Line costs less than 3 per cent.

Mr. DAVIS. Is that in existence now?

Mr. BLANCHARD. It is now in existence, in a modified form; but it is, as I said before, to be put upon a co-operative basis. Our second contract, that with the Erie and Pacific Dispatch, is to be annulled as a percentage line in April next.

The Erie and North Shore Line has done quite as large a business as the Great Western Dispatch, which shows that its expense can be proportionately reduced still, because the line is comparatively new. The Great Western Dispatch is over twelve years old. Therefore there is a saving of 6 per cent., certainly, to the stockholders of the Erie Railway between the two systems, taken from the actual records of our own traffic. The saving of this large percentage of earnings of course enables us to do better for our stockholders, and, in the gradually reduced rates

per ton per mile which all the railway companies of the country are receiving each year as compared with the one before it, enables us, by saving this percentage, to do better for ourselves, and for our transporters, and all people who ship property over the road.

Q. You gave me to-day one or two instances of the success of these fast-freight lines financially.

A. I will give you those from hearsay; I have not known the inside history of them. It was suggested to me at the time the Pennsylvania Company's Union Fast-Freight Line was organized to go to Chicago and assume the agency of that end of the Star Line, as it was called, and as one of the inducements it was suggested to me that their stock would be sold to me at the rate of 50 cents on the dollar. I have understood the person who did go there accepted the stock at the same price, but he was not to sell it at any time within five years. The Pennsylvania Company, as distinguished from the Pennsylvania Railroad Company, which is the company that has now assumed the leases of all the lines of the Pennsylvania Railroad west of Pittsburgh, has recently bought the stock of the Union Star Line, as it is called, the fast-freight line which included a branch that was subsequently added to it, called the National Line. I understand that they paid par for that stock. I understand that during the nine or ten years in which it has been running, large dividends have been regularly declared; that the mileage upon their cars has constituted an additional item of profit; and that a large cash surplus was in their treasury. I have also been told that the Empire Line, running over the Pennsylvania Railroad, which was the limited form of freight-line which I have referred to—that for the freight transported the Empire cars would pay the Pennsylvania Railroad Company and its connections over the Philadelphia and Erie, and the Allentown Lines, a fixed rate a ton a mile, which should not be less than one and a half cents, and any surplus they might get over and above that should belong to the company. I have been told that under the operation of that contract, particularly during the war, when the prices of transportation were high, oil passed over the Philadelphia and Erie Road, which paid the Empire Line a very large profit. Their gross profits during that time were very large.

The Pennsylvania Company, when they assumed the charge of the Union Line, modified it and abandoned the car contract system and the commission system under which it had formerly been working and substituted a modified form of commissions, the exact details of which I have not been advised of.

Q. Can you give us the names of the various non-co-operative lines running on the great trunk roads between the West and the East?

A. As I understand, they now comprise the Merchants' Dispatch, on the New York Central, the Empire Line, on the Philadelphia and Erie, and the Allentown Lines and the National and Union Lines upon the Pennsylvania Railroad, and the Erie and Pacific Dispatch Line, on the Erie. Some of these lines have recently had their organizations changed, and what their present detail is I am not able to state.

Q. What were the inducements on the part of the railroad companies to enter into contracts with those freight-lines in that way?

A. Ostensibly to secure the large aggregate of traffic they claimed to control, but in a great many cases a division of profits between the officers of the company and the persons entering into these contracts was effected by judicious distribution of their stock. I do not know of any other inducements that would cause a thoughtful and upright railroad manager to make such contracts.

By Mr. DAVIS:

Q. How will the middle-men or agents be paid under your present system?

A. We are able to dispense with perhaps one-third of those men. We retain the good ones and let the bad ones go, paying good ones salaries commensurate with the services they perform, but no percentages in any way or form.

Q. The entire profit that will be received for the transportation of goods east or west will go to the companies?

A. Yes, sir.

Q. We should like to know as to the rates where there is prorating done between water and rail.

A. There are a few which occur to me now as to the proportions which exist between a certain number of miles of water and a certain number of miles of rail. The Baltimore and Ohio company—and I suppose they would not object to my making use of information obtained while in their service, as it would probably be the property of the committee in any case—had an arrangement by which between the Ohio River and Boston the steamship line received 32 per cent. of the rate, and as the rate was made upon three hundred and seventy-five miles, for which the Baltimore and Ohio Railroad from the Ohio River to Baltimore being equal to 68 per cent., the remaining 32 per cent. made one hundred and seventy-six miles of rail for about seven hundred and seventy-five miles of actual water transportation, a little less than 1 to 4. That is where there is open ocean navigation; the Baltimore and Ohio company furnishing terminal facilities, which were extensive, at one end, and the steamship company furnishing facilities at the other. Where there is navigation of mixed canal and water, the canal involving payment of toll, the Baltimore and Ohio company had an arrangement between Baltimore and New York by which for an actual distance of about two hundred and thirty miles they paid a water-charge of one hundred and twenty-five miles. In other words, the two hundred and thirty miles of water were considered equivalent to one hundred and thirty miles of rail.

The Erie company now has an arrangement by which its rates from Buffalo to Boston by the outside steamers from New York are divided to allow the steamers 28 per cent. of the rate which, on five hundred miles, would be equivalent to one hundred and forty miles of rail for about four hundred and fifty miles of actual water transportation. Between Parkersburgh and Cincinnati, being still a somewhat different form of water transportation and subject to the rise and fall of the water, they paid for a water-haul of about two hundred and fifty miles the same as one hundred and twenty-five miles of rail. We have contracts with our steamboats on the lakes, where the Erie Railway Company furnishes the terminal facilities at Buffalo or Dunkirk, as the case may be, and the steamboat furnishes the terminal facilities as the other end or the lake port, by which we average the mileage to be allowed to them from Buffalo to Cleveland, Toledo, and Detroit at 25 per cent. of the rate. Our distance, therefore, being four hundred and twenty-three miles, would make their mileage in the neighborhood of one hundred and forty miles for an actual water transportation varying from one hundred and fifteen to two hundred and fifty miles. To points upon Lake Michigan, notably Milwaukee and Chicago, the actual water distance being about one thousand miles, we allow them one-third of the rate from New York; and four hundred and twenty-three miles, our actual distance to Buffalo, being two-thirds, the other third would be, of course, a half of that. which would be two hundred and twelve miles practically.

By the CHAIRMAN :

Q. From Buffalo to Chicago?

A. Yes, sir. I spoke to Mr. Davis this afternoon about the divisions to Du Luth. I found that those divisions were made up to allow us east of Buffalo precisely the same that we give on Chicago business, and that it is not a percentage basis, but that it will amount to nearly double the Chicago rate to Du Luth, so that practically the lake line has about four hundred and seventy-five to five hundred miles, the distance being about the same as to Chicago.

By Mr. DAVIS :

Q. Have you never furnished any prorating in the case of the canal?

A. No, sir; I have not.

By Mr. SHERMAN :

Q. In your contracts with express lines state generally what you charge them for the use of cars, and just what you do in regard to the division of profits.

A. The contract that the Erie company now has with the United States Express Company is one by which 60 per cent. of the receipts for the transportation of express goods between Buffalo and New York belong to the railway company, and the remaining 40 per cent. to the United States Express Company.

By Mr. DAVIS :

Q. What do they furnish?

A. For the 60 per cent. we furnish all of the motive-power and the men to load and unload the heavy classes of freight. We take risks for losses and damages which may be the result of gross negligence on the part of our own employes. For their 40 per cent. they furnish the teams with which the goods are collected at the terminal point and by which they are delivered at the other point, the messengers who attend to the property during its transportation, the making of the-way bills, the responsibility for all the collection of freights and charges, and the responsibility also for any losses, damages, detention, or errors that may occur through the faults or actions of their own agent.

Q. Do they allow anything out of the 40 per cent. for the use of cars?

A. No, sir. The express companies have contracts that vary with almost all the railways.

By Mr. NORWOOD :

Q. This, then, is an exceptional contract?

A. Ours has been perhaps until within a few years an exceptional form of contract, but it is gradually coming to be more in use than heretofore. Other companies charge a fixed rate per day, and allow them a certain amount of tonnage per day. For instance, they will allow 10,000 pounds in the direction in which the heaviest bulk of property usually moves and 5,000 pounds in the return direction, and for those facilities they will charge a fixed sum per day; and any amount of tonnage in either direction in excess of the allowance made, is charged at a rate per 100 pounds, which is usually about one and a half times the first-class rate of the local freight tariffs of the company by which the freight is transported.

By the CHAIRMAN :

Q. What is the effect of the sleeping-car companies upon the railroad?

Mr. BLANCHARD. I think that, like all these parasites which attach

themselves to railroads, sleeping-car companies are of questionable advantage to the railroad companies themselves. The result of the transportation of sleeping-cars has been that all this ornamentation and sumptuousness that you observe in the interior and in the running of these cars has been obtained at the expense of the railroads; first by the enormous weight which we are required to haul over our road at very high rates of speed, and as inciting similar outlays in day cars. In the next place, I believe in the railroad company furnishing such facilities as they may be able to do for all the travel, and charging, instead of such a large sum as is charged by those sleeping-car companies, a moderate amount for the same facilities. It seems to me to be a fair contrast that one pays more for a sleeping-couch from New York to Pittsburgh than the Fifth Avenue Hotel would charge for board for an entire day, where you get the servant required to answer your bells and perform all the services needed, and that of itself ought to show the large profit that they have. The charges are, in our judgment, excessive for furnishing those facilities, and we desire, if possible, to modify them.

By the CHAIRMAN :

Q. What have been the inducements heretofore for making those contracts so largely ?

A. Mainly the fact that the parties offering to make these contracts held the patents, which were well-nigh exclusive. Competition has required that the Erie company, for instance, should have, as against the Central and Pennsylvania roads, equal facilities and comfort for its passengers, and when it tried to get those these patents stood in the way of independent sleeping-cars.

By Mr. CONKLING :

Q. Are your statements about sleeping-cars applicable substantially to drawing-room cars also ?

A. They are practically the same thing. The charges for drawing-room cars are not, perhaps, as excessive as those for sleeping-coaches.

Q. What is the explanation of the fact that in the drawing-room cars, if you go to a certain point, buying your chair to that point, and when you reach there get out and get in again, or else change your mind without getting out and go on a hundred miles farther, that you are charged less than some other man who buys his chair to begin with from termini to termini ?

A. I do not know of any such case or any reason why it should be so.

Q. Is there any reason why it should be so ?

A. None that occurs to me.

Q. Is there any reason why people going to places more than fifty miles apart should pay the same rate for a chair ? Say two people start from New York, for example, if the railroad in question should lead from New York, and go one fifty miles farther than the other, is there any reason why the man who goes fifty miles, the less distance, should pay as much as the other man ?

A. No, sir ; I should say not. It has, however, been customary and in some cases necessary to block off these distances in stations of twenty-five miles or more, and inasmuch as there must be a line drawn somewhere, as they argue, all those charges being fixed by those sleeping-coach companies, they have to fix it, and they do fix it, at about twenty-five miles. In some cases at fifty miles.

Mr. NORWOOD :

Q. Do you know of any instance where railroads have put inferior passenger-coaches on in order to force passengers into these coaches, where the extra charge is made?

A. No, sir; I do not know of any such case, although I imagine some companies must have some such mental reservations, judging from the comparisons in cars which their trains afford.

Mr. NORWOOD. It has been stated that that has been done in order to have an extra payment of a dollar or two dollars.

The CHAIRMAN :

Q. We have never heard any complaint from your company with reference to the compensation allowed by the Government for carrying the mails and postal cars. What are your views on that subject?

A. At the time that discussion was going about among railroads I had nothing to do with it. I know that our company at that time had no postal cars on its line, but upon an examination of the figures submitted by the Philadelphia, Wilmington and Baltimore Road and other companies, who had run them, and looking carefully into their results, we concurred entirely in their view, that the compensation allowed by the Government was inadequate, and not as much per ton in some cases as we were getting for the transportation of flour from Buffalo to New York.

Q. What do you estimate the relative difference in the cost of carrying, at the rate of eight and ten miles an hour, slow-freight speed and express?

A. I doubt if any reliable data can ever be submitted to you. It depends so much on the curvature of the road, its grade, the price of fuel, the condition of track, and the exact differences of speed, the time you stop at stations, the construction of cars, and a thousand other things that make all those statistics, wherever you find them, purely theoretical. I would not undertake to answer it.

Q. Could you form any idea of the advantages to be gained by a double-track freight-railroad, used exclusively for freight purposes, over the existing system of transportation?

A. I have never given that subject attention, indeed. I have never thought of it, and an answer must be intelligent or worthless.

The committee here adjourned.

RICHMOND, VA., October 22, 1873.

The committee met pursuant to adjournment.

Statement of Gen. Thomas S. Boccock, of Lynchburgh, Va.

Mr. CHAIRMAN: I desire to say that I came here without any purpose of making any formal or extended argument to the committee in relation to the great question we have so much at heart, but merely, at the request of my friends in Lynchburgh, to welcome this committee, and to assure them that the people of the State, with, perhaps, less division of opinion than has existed on almost any other question, feel a deep interest in the completion of the canal which commences here and is to terminate on the Ohio River.

I am not an internal-improvement man. I have devoted myself to

other pursuits, and am not furnished with facts and figures proper to be used on such an occasion. I can, therefore, give you only a few general views in relation to this matter.

I said to you that our people are deeply concerned about this matter, and earnestly desire, almost without division of opinion—there may be one here and another there who have some old-fashioned notions, but the number who dissent are fewer than I have ever known on any question before. You know there is no proposition that can be proposed on which there will not be some little division. We desire it, of course, first on our own account. We think that the completion of this canal would be of immense benefit to Virginia and West Virginia in various respects. The fact that water communication is cheaper, better, and more eligible than railroad communication is now, I think, fully demonstrated. The mind of scientific and practical men through the civilized world has been directed to it for some years past, and I think it is now clearly established that water communication properly conducted is a better mode of transportation than railroad communication, for heavy articles at any rate. We, at this time, in our peculiar situation—and if I say anything in this connection that may seem to infringe upon the field of politics, I beg to assure you it is no disposition to say anything in the least discordant to any gentleman here; I know too much of what is due to gentlemen who are engaged in such business as this to be capable of such a thing—but you know that, owing to circumstances that are in the knowledge of us all, the industrial interest of our part of the country is somewhat depressed. A great change in our labor system has occurred. We have stood it as well as we could, but any such change must, under any circumstances, in any country, be attended with circumstances of depression. What we need now in Virginia is the development of our resources, or more diversity in our pursuits. Agriculture was our old business in the former state of things. The cultivation of the land, raising tobacco, wheat, &c., constituted almost the entire business of our country, with a little intermingling of State rights politics. But the business of the country was in the cultivation of the land—in agriculture. We find now that it is necessary to bring the agriculturist and the manufacturer face to face and diversify our pursuits; to have something like a system of manufactures in our country. One great desideratum for that is to develop our iron and coal, and bring them to points where they can be utilized. We have in our western country, and the upper part of old Virginia, immense beds of coal and iron that, by water communication, we could bring to convenient points and engage there in manufactures.

Then, the fact that we would have these means of transportation would encourage our people, bring us in more immediate connection with other parts of the country, would increase our commercial importance. Goods could be carried by those means to West Virginia, and, perhaps, to the Northwestern States. It would build us up as a shipping people, as a great commercial people. Norfolk and Richmond might become large importing places. We would hope so, because by means of this canal we could send our goods and the products of our commercial labor more cheaply to the people of the Northwest, the people of our part of the State, and West Virginia.

Another great reason why we want the canal built is that it is of great importance to the people of the Northwest. If you look at the map you will find that through Virginia is the near approach to water, I think, from almost the entire of Ohio, of Illinois, of Indiana, and from the Northwest down until you get away up in the region of the lakes.

If you make a computation you will find that it is cheaper to the seashore and harbor; a shorter distance to deep water through Virginia than by any other route that you can select. I am not advocating this route to the exclusion of others, but only showing its advantages, not for the purpose of operating against any other route. Then, while we do not wish to interfere with the northern routes, which have been established and always will be traversed, yet we have this little advantage of them, that it is nearer from those Northwestern States to deep water, and we lie in a more temperate climate where we are not interrupted in the winter by ice, &c. That, I think, is the great point. The Northwest is the great producing part of our country, where the grain is made more cheaply, and there it lies, because it is so expensive to get it to market that it does not pay; but by these means you can get to market more cheaply; and it seems to me that every year that passes creates a greater demand for grain in the Old World.

The wheat-crop in England has fallen more short of feeding the people in the last three or four years than for a long time. And the depression of agricultural business there makes it a great object of desire to bring the productions of this country in a position in which they can get most cheaply to the European market. If they have it, if this is a nearer route than any other, if the produce of the Northwest can get to the markets of the world better in this way than any other, we think it would be for the interest of all the people to have this route opened. As I say, we do not oppose any of them; have no contest to make. The northern routes are established; if there are other southern routes, good; we do not go against them.

Now, we cannot do this ourselves. This is a great national work. We do not advocate it now as a Virginia work, but as a great national highway. We want to submit it to the use of the public, have it free of expense, so that all the produce of the Northwest and West can come along it as free of expense as possible. And from that point of view we think it is eminently a fit subject for the Government of the United States to take hold of. It is proper that the Government of the United States should take hold of a great national work like this, and aid in having it made for the benefit of the country.

Then, we think that at this particular time this will be one of a series of measures, some of which have been already initiated, that would tend to restore harmony, good will, and peace to our country. No matter what has been our differing opinions upon the issues of the past, I have no doubt every man here regrets, and every patriot in the land regrets, that there is any cause whatsoever now of any alienation between the men of the South and the North, between the man of Virginia and South Carolina and the man of the Northwest, and there is not a patriotic heart within the whole limits of the Union that would not desire, if it could be done, that the last vestige of any feeling of that sort, of any feeling of discord, of alienation, should be obliterated, and that all should be united again as citizens of a common country, wishing for the common good, and each desiring the promotion of the other. I cannot imagine that there is a patriotic heart in the entire country that does not wish for a state of things when every man in the North would like to hear of the prosperity of the man of the South, and every man in the South would like to hear of the prosperity of the man of the North. The time may have been, and it was natural, that after such a war as we had there should be some alienation of feeling, some little feeling of heart-burning, of resentment. I thank God that, so far as I know about it, that feeling is passing away. We welcome

you here cordially and our brethren of the North engaged in a work of that sort, as warmly as we would welcome a man from Mississippi or anywhere else. We greet your coming; we desire to make you comfortable; we desire that you shall see all the resources of our State, hear our people, know our condition and wants. I would like to have you know everything about us, see what we consider our grievances, and that we could see you in order that all of these things should be removed and an entire feeling of harmony should exist in our country. With that view and with that object the building of that work through our midst would have a very happy effect. Not as a party measure; nobody desires it as a party measure; but as a measure of restoration and for the good of the country through which it goes, the good of the South, of Virginia, of the Northwest, of all; it would hurt nobody and benefit a great many. As I have said, if there be other works farther south or north that come in competition with this, we have nothing in the world to say against them. We want you to compare them with ours. We should be delighted for them all to be made. If you think that the cost of making these works is so great that only a few can be, then we say we submit the relative merits of the cost of improving, the work of making, and, when made, the value to the entire country, and all that sort of thing, to determine which is the best.

We do not enter into this in the spirit of rivalry at all. We enter into it in a spirit of desire for the greatest good of the greatest number; it is indeed a desire for the good of the entire country.

I know, one thing that you wish to know about very much is the practicability of this route. I have said I believed it opened up the shortest route for the produce of the Northwest from Ohio to the deep sea. We have the best harbor in the country at Norfolk. If you get there you have access to the markets of the world, and the question is as to the practicability of it. I do not feel very competent to speak upon that subject. I know this—I know that all the eminent engineers that we have ever gotten to examine this question, engineers appointed by the company, engineers appointed by the State, engineers appointed by the United States Government, have declared that it is practicable; that a sufficient amount of water can be obtained to make that canal from here to the waters of the Kanawha. Some gentleman remarked, with a great deal of practical wisdom, that these engineers are apt to think anything practicable; that they can do almost anything; but there could hardly be such an unbroken chain of decision by those engineers; they could hardly be so unanimous, these engineers appointed by everybody, in behalf of the practicability of this route, unless it was so. The United States Government appointed an eminent engineer, Major Craighill of the United States Engineers, to survey this route, and he reports it practicable. I remember, when I was a younger man than I am now, I was once connected with this company. We had a very eminent engineer here; Ellet, I think his name was, of New York. He married into one of our families in my section of the State, and was a long time chief engineer of the James River and Kanawha Canal. He devoted himself very much to the investigation of this question. It was a matter which took hold of his mind, which was a very scientific and acute one, and he wrote a pamphlet in relation to the practicability of supplying water for this connection. The canal crosses the Alleghany Mountains, and he demonstrated to the satisfaction of almost all persons who read his pamphlet that it was practicable and could easily be done, and every engineer since has made the same report. You will pass along there, however, as you go out, and we should

be very glad if in doing so you could have the aid of some good engineer to exhibit to you statements and plans by which your minds could be satisfied that this thing could be done.

Of course we would not want the Government of the United States to embark money in a scheme like this, and would not want any government to do it when nothing practicable could be the result. It is simply my judgment, from the opinion and statement of others, that it is a settled matter that it can be done. The question is, can it be done at an expense within reasonable bounds?

Now, this is not a work for an hour, a day, or a year, nor for this age. This canal once built is a great highway. It stands like any other great public improvement, established for all time. It is there for all time. There may be some little repairs, but it will constitute a great national thoroughfare that will exist as long as this country exists. Talk about obliterating the Erie Canal; how could it ever be done away with? When this work becomes established, and the trade begins to flow through it, and the different points interested in that trade become acquainted with one another, and all the surrounding circumstances connected with a trade of that sort becomes established, it is a work for all ages. As long as this country is known, has an existence, and is on the map, there will be that great work made by the Government of the United States for the benefit of its people. There is a work not for one age, or one generation, but for all time. A little expenditure of money by a great Government like this, so rich in means, ought not to constitute a very great objection unless it was an enormous, extravagant, and overwhelming amount. What is a few millions of dollars to the United States Government—a Government that can pay the interest readily on two or three thousand millions of dollars? What would it be to add to this temporary debt a matter that could be paid off very readily and in a very short time?

You were seeing to-day one branch of our industry, the manufacture of tobacco. We do not complain; we would like for it to be otherwise, but we beg leave to remind you that a good deal of your income comes from a tax on our tobacco. I do not know what the motives are; I do not pretend to intimate that it springs from any feeling of hostility to that branch of industry. Gentlemen very naturally think that it is proper to put a tax on luxuries rather than necessities. We would like very well, because it is an important part of our interest, that our tax should be less on that, but I am not arguing that subject. A small portion of that tax on tobacco would pay for the establishment of this canal, and then an increase of taxes generally would not be required. So, I say, this work could be done, and nobody, perhaps, in the Union feel the pressure of it; nobody be hurt by it; nobody's taxes increased by it to any appreciable extent, and a great work like that would be established—a great line of intercommunication through a temperate climate, the nearest way to the sea, connecting points so important that the great producing part of the Union, the Northwest, with such a port as Norfolk, through a genial climate and a mild sky.

By Mr. CONKLING:

Question. Has Congress, in your view, power to do it; and, if so, how?

Answer. We have always held that the mere local works must be left to the State. The great dividing line, the great distinction, we say, is this, that local matters are to be left to the local legislature, and great national works are to be left to the United States Government. That is

the leading distinction. It is necessary for the United States for its purpose, for the transportation of supplies, as Mr. Davis and Mr. Calhoun and others held that the Pacific Railroad was established.

I am aware you have to transport your troops from one part of this Union to the other, and supplies for those troops likewise, and in doing that you have to make great lines of intercommunication, which cannot be made by States. We hold that you would not have a right to do any local work, making a railroad from one point in a State to another, which is merely local, or establishing a canal merely local, because that is a matter of local concern; but these matters of great national concern for the purpose of opening up commerce between one part of the Union and another part of the Union, and, especially, opening our commerce between the Union and the world, are matters of congressional concern. This is not a canal for the purpose of opening up between Virginia and Indiana and Ohio, but to get them to the markets of the world.

We have reined in past days about this power to regulate commerce. We used to hold in olden times that the power to regulate commerce did not empower to create commerce—to regulate the commerce between the different States and foreign nations, &c. But if there be produced a trade in the Northwest which cannot get to the markets of the world, and which the Northwestern States cannot make to the markets of the world, or if there is commerce in Virginia which she cannot get to the markets of the world, is it not a fair construction of that clause of the Constitution to let that commerce out to the world? I can say to you that, under the particular circumstances of the case, in the situation we are in, we take a larger view. We have been cautioned so frequently that we ought to take a more national view of things, and that we ought to look up to the national Government as a government to take care of us, and do good to us, that we yield a little more than we used to do.

I do not think the resolutions of 1798 and 1799 are drawn so peremptorily and rigidly on our side now as we used to do in old times. The condition of things has changed, but the Constitution has not changed; it is what it was once. But it does seem to me that, under a fair construction of the power to regulate commerce, if there be commerce which cannot otherwise get out to the markets of the world, if there exists production which cannot get to the markets of the world except by the construction of a great work, and that work not a local work, and not within the bosom of a State and for State purposes only, that the General Government has a right to help it.

Q. In applying that to this case, in your opinion, Congress has power within the limits of the Constitution to make this canal and slack-water navigation in question four hundred and twenty miles?

A. I think they have the right to make whatever improvement is necessary.

Q. This very improvement I am talking about?

A. Yes, sir; this very improvement. How do you view it yourself?

Q. I am seeking and not giving information. I desired to know what you thought upon that branch of the subject.

A. I think that the trade of the Northwest and of West Virginia has the right to get out, and I say that the mode of letting it out is not within the power of the State.

Supposing there was a little State like that on the top of the Pyrenees Mountains, situated right in the heart of our country, a State producing an immense quantity of products of every sort; it would not have the

means to cut a way out for itself, but ought not the General Government to superintend the national concern, to make a way for its outlet of trade? It could be done without hurting it. If it be not the regulation of commerce, it is the creation of commerce to be regulated, and implies the regulation of commerce between the States. The exact meaning of the phrase "to regulate commerce between the States" it is difficult to arrive at, but it sometimes, to some extent, implies the idea of facilitating commerce. There is no doubt of that, or of putting commerce in motion. If there be the means of commerce which ought to be utilized, which are necessary for the welfare of a State; the idea of regulating that commerce implies the putting that commerce in operation, putting it in a situation in which it would be subject to rules and regulations. My own impression is now that the great dividing-line between what Congress may or may not do about commerce is, that works which are merely local, merely domestic, interesting a particular part of the country solely or particularly, ought to be within the limits of State jurisdiction, while national works that are for the good of a great part of the country, and cannot be made by any particular part of the country, ought to be under the jurisdiction of Congress. I merely, however, wish to impress on your mind the idea that we were very much concerned about this matter; that we are greatly desirous that it should be done; that we do it, not in any party or political sense, but for the good of all branches of the country, no matter what politics. We do it for the good of all, though we think that our immediate good is deeply concerned.

By Mr. NORWOOD:

Q. On the subject of the power of Congress to act, allow me to ask you whether you think that Congress derives any power from that clause in the Constitution which authorizes it to legislate for the general welfare and the public good? I do not know that I give you the exact language of the clause.

A. I remember what it is. I have been raised in a school, whether for good or evil, that believed that that was a clause restrictive upon other clauses and not an independent clause in itself; that it qualified the power of Congress to exercise other specific powers, and that Congress could not undertake to do exactly anything that they thought was for the public good.

There are certain restrictions, in the first place, upon the power of Congress, which Congress cannot do by the very terms of the Constitution. They could not confer a title of nobility. If it was thought that the use of that order in this country would benefit the public they could not do it, because there is a positive restriction in that respect. So on many other things I might mention. Then of the substantive powers which have been given by Congress, they can exercise them provided they think that the public good requires it. I would derive the power from the war power of Congress and from the power of Congress to regulate commerce. The two powers in this come together. The general power of Congress to establish such works as would enable it to carry on its operations, to prepare for the great business that it has to do, to move troops, to send supplies to troops, &c., and then to let the means of commerce, the elements of commerce that exist, be vitalized, and rendered efficient, and thus be brought under the power of Congress to regulate commerce.

By Mr. SHERMAN :

Q. I wish to ask whether the existing canal is the property of the State of Virginia ?

A. No, sir ; I think not.

Q. Is there any corporate right ?

A. Yes, sir ; there are corporate rights ; private stockholders. The State of Virginia, however, has a controlling interest in it. There are a number of private stockholders in it.

By Mr. CONKLING :

Q. The State owns about seven millions, does it not ?

A. Yes, sir ; and the State has debts on the canal which would enable them to control it at any moment.

By Mr. SHERMAN :

Q. Suppose the Government of the United States should undertake to aid in the construction of this work, how could these private rights be extinguished so as to make it a Government property ?

A. There would be no difficulty about that. In the first place we could close out a mortgage and sell it out and get control of it in that way, and in the next place we could get in the private stock at a nominal sum. It is not considered worth much. It pays no income, and I do not know that there is any quoted value to the stock.

Q. It is a corporation now under the laws of Virginia ?

A. Yes, sir. I do not think the stock would sell for one per cent. There are mortgages upon it to secure debts due to the State that would enable the State to sell it out at any moment. The State would take care of that. There would be no difficulty on that subject. (To Mr. Norwood.) I suppose the clause of the Constitution which you spoke of is that which enables Congress to promote the public good and provide for the general welfare.

By Mr. NORWOOD :

Q. Your idea is that that clause is not simply superlative and unnecessary, but that it is positive in its character and acts as an inhibition on certain powers of Congress.

A. Yes, sir ; it is a clause attached to the other clauses and qualifies the right to apply the other clauses. That has been our view, that we have a right to do a certain thing, and to do it at a time when, and in a manner in which, it will be for the public good and promote the general welfare. We have always thought that it would be giving Congress almost unlimited power if you let them do exactly what they thought for the public good—to make their own discretion the measure of their power and not the Constitution. If we had the Constitution here I would undertake to show how it is connected with the other clauses, but so far as we are now concerned we are not very scrupulous. If the gentlemen of the committee or our Congress of the United States think there is any clause that enables them to do the thing, we want the thing done. We are for the thing now, and not particular about deciding the clause under which it may be done.

Col. WM. P. CRAIGHILL, Maj. U. S. Corps of Engineers, was then called.

The chairman stated that Colonel Craighill appeared before the committee at his request.

Colonel CRAIGHILL said :

Mr. Chairman, I propose to make a brief statement concerning the central water-line, and while so doing I will refer in passing to several maps which I have procured from the Engineer Bureau of the War Department, and have brought to exhibit to the committee in accordance with the written request of the chairman. The largest map shows the whole route from the capes of Chesapeake Bay to the Ohio River at Point Pleasant, at the mouth of the Great Kanawha River.

The object of the "central water-line" is to make a continuous navigable communication by water from the Ohio River, at the mouth of the Great Kanawha River, to Chesapeake Bay, at the mouth of the James River.

The first surveys along this route were made in 1817-1819, contemplating a slack-water navigation for boats of about 2 feet draught, with a connecting pike-road over the mountain.

Mr. CONKLING. What were the termini of the pike-road?

Colonel CRAIGHILL. I am not able to point out the precise points. Covington was probably one terminus. The chief engineer of the Chesapeake and Ohio Railroad, who is present, will doubtless be able to say what was the original extent of the railroad which was in later years proposed in place of the common wagon-road. I have understood that General Washington projected the connection of the head-waters of the James and Kanawha Rivers by means of a common wagon-road or pike.

The CHAIRMAN. Where are General Washington's recommendations on that subject to be found?

Colonel CRAIGHILL. I am unable now to indicate where they are recorded.

Mr. CARRINGTON. They are in the documents now in the possession of the committee. I will point them out. His letter will be found published in one of these documents.

Colonel CRAIGHILL. The next surveys were made in 1826-1828 for a continuous canal and slack-water navigation by Captain McNeil, U. S. Topographical Engineers. That is the first occasion of which I am informed when the United States Government evinced a special interest in the matter. Other surveys have been made since McNeil's time, but his general location is still found to be the best. The line commences at Richmond, with a large dock and tide-water connections; thence up the James River through Lynchburgh to Buchanan, one hundred and ninety-six and one-half miles, including one hundred and fifty-nine and three-quarters miles of canal, and thirty-six and three-quarters miles of slack-water navigation, which is now completed and in working order; thence it follows up the valleys of the James and Jackson Rivers to Covington, a distance of forty-seven miles, of which forty-one miles is canal and six slack-water. This portion has been definitively located, and its execution was contracted for some years ago, but it is not entirely completed. From Covington, the line, as projected, ascended Dunlap's Creek as a canal, and followed Fork Run to the summit-level, where it pierced the mountain by a tunnel two and six-tenths miles long at an elevation of 1,916 feet above tide-water. It descended thence the valleys of Tuckahoe and Howard's Creeks by canal to the Greenbrier and New Rivers, down which, as well as down the Kanawha, slack-water navigation was projected to the Ohio, a distance of two hundred miles, making a total distance from Richmond of four hundred and eighty-six and thirteen one-hundredths miles. Special surveys were also made from time to time of the Greenbrier, New, and Kanawha Rivers and their head-waters, as well as those of the James River, by such men as Ellet, Gill, Fisk, and Lorraine. In 1868, Mr. Lorraine, the

chief engineer of the company, in order to avoid the large number of locks required to attain this summit-level and to save the time necessary for passing them, proposed a new location for the summit, which, by the use of a longer tunnel, reduced the elevation of the summit-level 216 feet, thus making it 1,700 feet above tide. This change also saved three and one-half miles in actual length of canal and about forty miles of *equated* length by saving lockages. This reduction in the height of the summit-level gives also the advantage of tapping the water-shed 216 feet lower than the McNeil summit, and thus making available a large additional amount of water for the use of the summit-level.

In 1870 Congress directed further examinations of the route of the James River and Kanawha Canal. These were made under my general supervision. Mr. W. G. Turpin was placed in charge of the re-examination of the line of the canal from Richmond to Buchanan, with a view to a determination of the cost of its enlargement. To Mr. William R. Hutton was assigned the duty of re-investigating the question of continuing the communication by water from the end of the old canal to the waters of the Ohio River.

Report was made January 27, 1871, for which see Executive Document No. 110, House of Representatives, Forty-first Congress, third session.

Additional surveys were made by Mr. Lorraine, under my direction, in 1872. Special report on the Kanawha will be found in print in Executive Document No. 25, Senate, Forty-second Congress, third session, page 44, &c. Further report on the canal was made April 11, 1873, which is not now in print, but will, it is supposed, be submitted to Congress at the opening of the next session.

The Lorraine tunnel, as located from the survey of 1870, leaves Fork Run 216 feet lower than the McNeil tunnel, and strikes the valley of Howard's Creek, near the mouth of that creek, on the other side of the ridge, at the same distance (216 feet) below the level of the McNeil tunnel. The canal thence continues down Howard's Creek to the Greenbrier River. From the mouth of Howard's Creek the navigation is no longer by canal, but by slack-water, (except in two short sections, where the canal is necessary,) passing down the Greenbrier to New River, and down the New River to the Kanawha at a point, Paint Creek Shoal, about eighty miles from its mouth. From this point to the mouth of the river open navigation is proposed, the fall in the river to be equalized by low dams, with sluices to permit the passage of steam-boats.

The dimensions of the existing canal from Richmond to Buchanan are 50 feet width at water-line, 5 feet depth, locks 100 feet long, and 15 feet wide. The dimensions proposed for the enlarged canal are a width of 70 feet, a depth of 7 feet, with locks 120 feet by 20. This will accommodate boats of 280 tons, drawing 6 feet water. These are the dimensions of the Erie Canal. The estimated cost of the work, after surveys and computations by experienced engineers, is \$50,000,000.

Some persons have doubted whether the water supply was sufficient to keep the summit-level full. I will add a few words on that particular point. In order that all reasonable doubts on that subject might be removed, Mr. E. Lorraine spent an entire year (1851-1852) in gauging the streams and surveying the country in the vicinity of the summit-level. (See his report, page 56 of Executive Document No. 110, already mentioned.) The map of his survey is here spread out before the committee. He located and calculated the capacity of a reservoir on Anthony's Creek, which, in addition to the water furnished by the Upper Green-

brier, gives a surplus of more than thirty-five hundred millions of cubic feet in a year, which is considerably more than a full half-year's supply for the summit-level, and this upon the supposition of its constant use by boats passing in both directions. (See page 19 of Executive Document No. 110, already referred to.)

Some persons have doubted also whether the long tunnel could be excavated within a reasonable time, and for the sum it is estimated to cost. This is not a matter left to mere conjecture, but the reasons for believing that the tunnel is a work of easy execution at a reasonable cost are these: The Mont Cenis tunnel is of about the same length as the Lorraine tunnel, and has been finished. If the circumstances of the two were similar, the second could be much more readily carried through than the first, as all the failures, &c., of the first would be avoided entirely in the second. But the circumstances are much more favorable for the Lorraine tunnel. At Mont Cenis, the tunnel was so deep below the surface that vertical shafts could not be sunk for the purpose of removing material, or of relieving the excavation of percolating water by the use of pumps, or of giving ventilation. All material was necessarily taken out at the two ends. At the Lorraine tunnel there are places actually located for six shafts, varying in depth from 300 to 700 feet, the greatest distance between any two of them being 7,500 feet. Instead, then, of making but one long tunnel, it is really making seven shorter ones of moderate length, which can be carried forward from each end of each. The Mont Cenis tunnel is 26 feet wide by 25 feet high. The Lorraine tunnel is to be 52 feet wide by 34 feet high. It might be supposed that the large size of the latter would increase very much both the time and expense of its execution. It is not so. One of the chief difficulties in tunneling is the contracted space for working. In the large tunnel a greater force can work. There will be a much larger face of rock to work against. The case will approximate to that of working in an ordinary quarry of rock with a good presentation of surface to attack. It is computed that at a rate of progress of but one-half what has been actually made at the Mont Cenis tunnel, the Lorraine tunnel would be complete in six years. The experience of the engineers and contractors, who have been engaged in making the deep cuts and long tunnels of the Chesapeake and Ohio Railroad, in the immediate vicinity of the site of the Lorraine tunnel, has been also availed of in fixing the cost and rate of work in that tunnel, although, in order to have the estimate full, a rate of progress has been assumed as the basis of the estimate less than what has been actually made by them in the same locality, and the price per yard has been on the other hand assumed as much larger than they have actually found such work to cost. The Mont Cenis tunnel cost \$1,000 per lineal yard. The Hoosac \$900. The estimate for the Lorraine tunnel is \$975. It will probably cost less. When the proper appliances had been obtained at the Mont Cenis tunnel, the result of experience, the cost was reduced to \$500 per lineal yard. There is no doubt that if the operations at the Hoosac tunnel had always been under proper control, the cost there would have been far less than \$900 per lineal yard.

In conclusion I will take the liberty of reading a short opinion given by Mr. B. H. Latrobe, one of the most distinguished engineers in this or any country, who has had the peculiar experience of being the consulting engineer on the Hoosac tunnel in one of the most favorable periods of its progress, and also personally studied on the ground the work at Mont Cenis.

Before reading it, I will state that when that opinion was written, it was supposed the tunnel would be nearly ten miles long :

BALTIMORE, May 1 1868.

DEAR SIR : I am in receipt of your letter of the 30th ultimo, and of the map and report accompanying it, and which contains the most specific information you are able to give me as to the profile of the proposed long tunnel at the summit-level of the James River and Kanawha Canal. I would, of course, have liked to have had before me an accurate longitudinal section of the line of the tunnel, but the heights above tide shown upon the topographical map, and the projection of the position of the work thereon, enable me to say what follows in the way of an opinion, which, if it will assist you in recommending the enterprise, I shall feel glad to have given, desiring, as I do, the success of every effort to improve the communications of our common country, aside from all local interest.

I cannot hesitate to pronounce the proposed tunnel of ten miles in length *entirely practicable*, nor do I doubt that, for the reasons assigned in your letter to me, it would be expedient to adopt it instead of the shorter one of two and six-tenths miles. The assumed summit-level of the canal being 1,700 feet above tide, and the highest surface-elevation at the top of the Alleghany Mountain over the tunnel being but 2,606 feet above tide, if one or more shafts had to be sunk, even at points as high as this, they would still be not excessive in depth. I judge, however, from an inspection of the map, that if the line of the tunnel be curved as you suggest, to which I see no serious objection, (the radii being large,) the extreme depth of shaft need not exceed 600 or 700 feet, and the average depth about 400 feet. If, then, we assume a shaft in each mile, we can estimate the time required to execute the work with some certainty. Experience in sinking the deep central shaft of the Hoosac tunnel, of 1,030 feet in depth, has shown that in the mica-slate rock of that mountain a speed of 25 feet per month can be made in drilling by hand-labor and blasting with common gunpowder. In the clay-slates and sandstones of the Alleghany Mountain, I believe that a progress of from 30 to 40 feet per month could be effected, even by hand-drilling, and considerably more by machine-drills and nitro-glycerine. If we assume, then, but $33\frac{1}{3}$ feet per month, ten shafts of 400 feet average depth can be sunk in twelve months after being fairly started, and as they may be simultaneously begun and finished, the work of drifting horizontally in the body of the tunnel could be commenced at two faces in each shaft, or twenty faces in the whole ten shafts, supposing the whole tunnel to be taken out through the shafts, and allowing nothing for the approach-cuts. There would then be a half-mile to drive each way from each shaft; at an average rate of but 100 feet per month, the several workings would meet in twenty-six and four-tenths months, or a little over two years. Adding to this the twelve months employed in sinking the shafts, we have three years and two and four-tenths months, and with a further addition of enough time for preparation and contingencies to make up four years, the work could be finished and in operation at the end of that period. It may seem incredible that a ten-mile tunnel could be finished in any such time, and if the time already spent at the Hoosac and at Mont Cenis be taken as settling the question, it would be at once decided adversely to this estimate. But we must look at the recent progress of these works, with the advantage of, the experience earned by them and now available to a new scheme of similar character, and not to the average progress, including the delays attendant upon mistakes made in the outset, and the defects of the labor-saving machinery which has since been perfected and is now realizing such vastly improved results.

Having driven more than one tunnel in slates and sandstones, such as will be met with in the Alleghany tunnel you have projected, I am well acquainted with the character of those rocks, and know that very rapid progress can be made in them. The strike and dip of the strata at your locality are also as favorable as possible to safe and speedy working. I assume that the most improved drilling-machine will be used, and that, as suggested in my last report upon the Hoosac tunnel, which you have, the whole section be taken out at once, without any preliminary "heading," which can be readily done with drill-carriages properly constructed for the purpose. I also suppose that nitro-glycerine would be used as the explosive, although that would not be necessary to insure a progress of 100 feet per month, much more than which has been effected with gunpowder, both at Mont Cenis (where as much as 272 feet per month has been accomplished) and at the Hoosac, where 131 feet has been driven in a much harder and tougher rock than either that of Mont Cenis or the Alleghany Mountain.

As much water may be encountered in your long tunnel, the most effective means of raising it must be provided, and for this no engine can be compared with the Cornish engine, (of the "bull" form,) placed at the *top of the shaft*. The hoisting and ventilating machinery must, of course, be of the most approved form, and, in short, all the operations within and without the tunnel made to harmonize in the most perfect manner.

In conclusion, I will add that I have never felt, in giving a professional opinion, more perfect confidence in its soundness, and the certainty with which the results predicted can be realized.

I am, dear sir, yours, respectfully and truly,

BENJ. H. LATROBE,
Civil Engineer.

E. LORRAINE, Esq.,
Engineer and Superintendent James River and Kanawha Canal, Richmond, Va.

The map now in my hand shows the results of the survey of the ground in which the long tunnel is located; the curved line is the location of the tunnel; its profile is shown on this large map. This is the result of actual surveying, not mere conjecture. The survey was made in 1870 under the authority of the United States.

By the CHAIRMAN:

Question. A survey made under your direction and by the authority of the United States?

Answer. Yes, sir. It is perhaps proper that I should explain that that is the reason why I am here to-day. I am not representing the James River Company or any other company. I was requested by the chairman of the committee to be present here and bring these maps, and say what I had to say on the subject. The maps belong to the Engineer Department in Washington, and were borrowed by me for the purpose of presenting them before the committee.

By Mr. SHERMAN:

Q. Can you tell now the character of rock that you will have to penetrate?

A. Of course I cannot tell exactly what kind of rock we are going to find there; but it will be sandstone and perhaps some limestone. The experience of the Chesapeake and Ohio Road, which has been running some of the longest tunnels in the country in that locality, is very valuable, and Mr. Whitcomb is here in order to give information to the committee upon that particular point.

By Mr. DAVIS:

Q. There have been doubts as to the supply of water in dry seasons. Have you, after the experience of the engineers in gauging, &c., any doubt upon that subject?

A. I have none whatever, sir.

Q. Will there be a surplus of water at the proposed enlargement of the canal after the supply?

A. Yes, sir. I state in my report that this Anthony's Creek reservoir contains a surplus of more than 3,500,000,000 of cubic feet of water over the necessities of the canal, which is about a half year's supply for the whole summit-level.

By the CHAIRMAN:

Q. Do you remember how many lockages per day you estimated for? Did you estimate the number of lockages that would give the entire capacity of the canal?

A. Yes, sir. We have assumed a trade of 180 boats per day, but it will be prudent to provide a supply of water for 200. This 180 boats a day is about as many as can pass. Allowing them one and one-half locks full of water to each boat passing the summit-level, we will require 300 locks full of water per day for a maximum trade. The greatest lift

between Greenbrier and Covington, the portion of the line to be supplied from the summit-level, is 14 feet, and the locks being 120 feet by 20—

We have 300 locks 120 by 20 by 14, equal to cubic feet per day.....	10, 080, 000
Evaporation on 21.9 miles, (the tunnel being excluded,) one-third of an inch per mile per day, cubic feet.....	225, 264
Filtration, cubic feet.....	5, 240, 400
Waste at structures, cubic feet.....	43, 200
Leakage at lock-gates.....	1, 728, 000
Total cubic feet.....	17, 316, 864
The minimum flow of the Greenbrier, as gauged by Captain McNeil, was 97 feet per second, or, per day.....	8, 380, 800
Leaving to be supplied from other sources.....	8, 936, 064
Suppose the flow of the Greenbrier to continue at its minimum for an average period of 120 days, the total quantity to be furnished would be, cubic feet.....	1, 072, 327, 680
The reservoir surveyed by Mr. Lorraine will contain 4,806,000,000 cubic feet, and the observed discharge of the stream (where it has been gauged) for a year of much less than the average rain-fall is.....	5, 684, 229, 000
Diminish by the evaporation of one-fourth of an inch per day for one year, from the surface of the reservoir....	899, 405, 100
And we have available for the canal.....	4, 784, 823, 900
Or a surplus of.....	3, 712, 496, 220

As fears have been expressed by some persons not familiar with the subject that a reservoir supplied chiefly from rain-fall might fail to furnish the anticipated supply, it is well to observe that the valley of the Greenbrier River is extremely favorable for the construction of reservoirs, with which it might be filled throughout its length of sixty miles, in which any amount of water from the spring and winter floods might be stored up for use in times of drought. Without going into all those details, I gave the general result in the statement read to the committee. I will repeat that this question of water-supply has been very thoroughly investigated by Mr. Lorraine—that he spent a whole year in that part of the country where the question of water-supply comes in, and I think its has been settled as satisfactorily as anything of the kind could be.

By Mr. DAVIS:

Q. Was there a question as to water when the tunnel was to be made 200 feet higher than it is?

A. Yes, sir; but the details of this portion of the old project I have not investigated much, as it was not necessary to do so. Captain McNeil did contemplate a reservoir. Of course it was not required to be so large as for the present larger canal.

Q. And there would have been sufficient water at the higher elevation?

A. Yes, sir. The arrangements for supplying it are shown on the map before the committee, the feeder, tunnel, &c., all indicated in detail

Q. Have you in your work estimated in any way for a supply of water for the Kanawha and Ohio below this summit-level?

A. Mr. Lorraine made the survey of the Kanawha River under my general direction, and he contemplated the use of the Meadow River reservoir for the supply of the Kanawha River.

Q. How as to the Ohio?

A. I have had nothing to with the Ohio, and therefore prefer to say nothing about it.

Q. With the reservoir (on the Gauley, I believe) which you spoke of, would it increase the water to any great extent in dry weather in the Kanawha? In other words, would it keep the Kanawha supplied during the dry season so that there would be no question about water there?

A. The object of the Meadow reservoir was to provide in dry season for supplying the deficiency of the Kanawha itself, in order to give a navigation of 6 feet draught of boats continually; that is, during the dry season as well as at other times.

Q. In the Kanawha?

A. Yes, sir. Mr. Lorraine made some suggestions with reference to the supply of the Ohio, but I did not consider it my duty to criticise them at all, because I had nothing to do with the improvement of the Ohio River, and prefer to abstain from giving any opinion on the subject, as it would be improper for me to do so.

Q. There has been some question as to whether the estimate of cost was sufficient. Was there any percentage added to it after your estimate was made?

A. It is usual, after making an estimate of that sort, to add 10 per cent. for contingencies, as it is called, and that was done as usual.

Q. That was done in this case?

A. Yes, sir. With reference to the estimate I must say that we have endeavored in all cases to overestimate, and that, I think, is a safe rule always. Just as, for instance, in estimating the expense of this long tunnel, as I stated, we were not satisfied with taking the basis of the Mont Cenis Tunnel, but we assumed a rate of progress of half the rate there, and the cost of this tunnel is based on that assumption; whereas I have no doubt that by availing ourselves of the experience gained and the improvements in machinery, &c., made at the Mont Cenis and Hoosac tunnels, we can greatly exceed the rate attained in those works.

By the CHAIRMAN:

Q. The Mont Cenis tunnel was much smaller than this?

A. Yes, sir. It was, I think, 25 feet wide, whereas this is considerably more. But, as I said before, I think that the size of the Lorraine tunnel, after we once get under way, is really an advantage rather than a disadvantage, as is obvious. For instance, if the face of the rock we were working against was as large as that side of the room which you see, it would of course be much easier to make headway in it than it would be if the space on which we were operating was no larger than that mirror.

Q. Would it not require a great deal more expense and labor to take out the material?

A. No, sir; to use a common expression, when the job is a large one the cost per cubic yard is very much diminished.

Q. I thought you estimated this at \$975 per linear yard, and the Mount Cenis was \$1,000. This being so much larger, I wanted your

opinion as to whether the convenience of taking it out would counter-balance the additional quantity.

A. Yes, sir; that is my impression.

By Mr. DAVIS :

Q. Have there been other estimates than yours on the work, and if so, were they above or below yours?

A. The estimate in my report exceeds that of Mr. Lorraine, who made the estimate for the whole length of the work.

Q. To what extent does it exceed that?

A. I think probably some \$6,000,000; something like that.

Q. Your estimates were made from actual survey from here to the Ohio River, I understand?

A. They were.

By Mr. NORWOOD :

Q. Have you stated the time within which that canal could be put into operation?

A. I think it can be completed in six years from the time of the first appropriation.

Q. I understood you to say that the tunnel could be finished in six years.

A. That would cause more delay than any other part of the work. When I say that, I must qualify, of course, with this further statement, that the money must be supplied as required; that there is to be no delay or loss of time for want of money to go on continuously, which is often the case, as you are aware, with the operations of the General Government, between the exhaustion of one appropriation and the granting of another.

By Mr. SHERMAN :

Q. What cases of long tunnels are there for canals in the world?

A. I recollect none at this moment.

By Mr. NORWOOD :

Q. Has not the Caledonia Canal long tunnels?

A. Probably it has, but I think not.

By Mr. DAVIS :

Q. Do you know the length of the tunnel on the Chesapeake and Ohio Canal?

A. I do not. I am not at all familiar with the Chesapeake and Ohio Canal.

Q. Do you know that there is one of considerable length on that?

A. I have heard so. I had hoped to-day to have here with me the gentleman who was lately the chief engineer of the Chesapeake and Ohio Canal, who made a considerable part of the surveys which are embodied in the map before the committee, but he was prevented from coming.

By Mr. SHERMAN :

Q. How about difficulties that may occur in finding veins and seams that may drain off water, &c.

A. All those things have been considered, looking at the experience of the execution of other great tunnels and especially those in the immediate vicinity of this one; that is, those on the Chesapeake and Ohio Road.

Q. Could they be tested by a large volume of water? Would a tun-

nel for a railroad be tested by the pressure of a large volume of water?

A. O, I did not take the point of your question.

Q. I speak of the effect of the water-pressure in a tunnel through a mountain by way of leakage and finding seams, &c., whether any difficulties occurred to you at that time, and I wish to see whether any great tunnels have ever been built through a mountain in that way.

A. My memory does not supply any data on that subject, sir, at the present time, which I would be willing to state as reliable information.

By Mr. CONKLING:

Q. Suppose you come to fissures in the rock, either at the bottom or sides?

A. They would be closed by masonry. In the estimate for this tunnel, the probabilities of the leakage of water and the necessity of lining the tunnel, so to speak, has not been overlooked.

By Mr. SHERMAN:

Q. What sort of lining?

A. Brick masonry.

By Mr. DAVIS:

Q. What we usually term arching?

A. Arching and siding.

By Mr. CONKLING:

Q. Side, bottom, and top?

A. Yes, sir; wherever it may be necessary.

By Mr. NORWOOD:

Q. Do you not propose to have a top-lining all over?

A. No, sir; only where it is necessary. The lining, however, is not a very large item in the expense.

Q. Do you know whether any fissures were found in the Hoosac tunnel?

A. I do not, sir, of my own knowledge. I never have been there. I think there is present, however, an engineer who was connected with the Hoosac tunnel, and can answer those questions. He says, I understand there are no fissures in the Hoosac tunnel whatever.

By Mr. DAVIS:

Q. Can you give us the elevation of the Ohio at Point Pleasant, so that we will know how much elevation we will have on the west side?

A. In Mr. Milnor Roberts's report of the Ohio River to the War Department, he gives all of those details. I think it is 520 feet above tide. His report is contained in Ex. Doc. No. 72, House of Representatives, 41st Congress, 3d session. It is very interesting and instructive.

Q. That would make, then, about 1,200 feet lift on the west side?

A. Yes, sir.

Q. That, of course, would reduce the lockage to 1,200 feet on the west side?

A. Yes, sir; it would be the difference, of course, between 1,716 and 520 feet.

Q. Do you know how much of that is overcome in open navigation before you strike the canal?

A. The reports themselves show it, but I do not recollect those figures. They are all embodied in the official documents.

H. D. WHITCOMB, chief engineer of the Chesapeake and Ohio Railroad:

The CHAIRMAN. The committee would like to hear of the practicability of this tunnel spoken of by Colonel Craighill, and as to your knowledge of the country from practical operations near to it. Please state what information you have on that subject.

Mr. WHITCOMB. We have a tunnel on the Chesapeake and Ohio Road through the Alleghany Mountain 4,700 and a few additional feet that I do not remember. That is a double-track tunnel about 30 feet wide.

By the CHAIRMAN :

Question. What distance from this tunnel as located ?

Answer. I do not know, sir, exactly the distance; I suppose, however, that it is inside of two miles perhaps.

By Mr. CARRINGTON :

Q. I do not think it is more than three-quarters of a mile.

A. It is not over a mile.

By the CHAIRMAN :

Q. Do you know at what elevation above the tide-water your tunnel passes through ?

A. Two thousand and sixty feet. That is at the western end. It is about 30 feet lower at the other end.

Q. It is about 360 feet, then, higher than this proposed canal-tunnel ?

A. Yes, sir.

Q. Please state the character of that rock, and the difficulties of the work, if any.

A. It is a blue slate, and some of the shale that is associated with the slates of the Alleghany. About one-half of the tunnel has been arched. The other half stands very well without arching. I think it probable that this tunnel, from what I have seen of the rock in that neighborhood, being lower, would be in slate, and perhaps some sandstone, though rather a hard shale that is called sandstone in that country, but is not exactly a sandstone. The harder rocks of that country are generally above us. Wherever we have had occasion to excavate the foundation near the line of this tunnel, we found this hard blue slate.

Q. Is that slate strong enough to support that tunnel ?

A. I should think that to some extent it would be. It is very hard to say until you get into it. It would depend a great deal on the dip of the slate. If it was level it would require arching. It is generally at an angle, sometimes inclined in one direction and sometimes in another. The rock is very favorable for progress. The Alleghany tunnel was taken out by the State of Virginia, previous to the war, for \$2.75 a yard, payable in State bonds, which were then selling at about 80 per cent., according to my recollection.

By Mr. DAVIS :

Q. That was the contract price ?

A. Yes, sir.

By the CHAIRMAN :

Q. It was done under that contract ?

A. Yes, sir, for the most part. The Chesapeake and Ohio Railroad Company, which succeeded the State in this work, finished it.

By Mr. DAVIS :

Q. What did they pay ?

A. We took it with a company force. There was a small amount to be done.

By the CHAIRMAN:

Q. Do you know anything about fissures in the rock?

A. There are springs in the tunnel, but I have never seen a tunnel yet when there was not water running out of it, if there was any in it at all.

By Mr. NORWOOD:

Q. Do you know how much that price made per linear yard?

A. For the mere excavation of the tunnel it would be in the neighborhood of \$1.80, by a rough calculation.

By the CHAIRMAN:

Q. In the excavation, of course, you mean the removing?

A. Yes, sir; that is, in distinction from the arching, which is done afterwards.

By Mr. DAVIS:

Q. You contracted, I presume, for some of your tunnels. When they are in the Alleghanies, what was the price you paid, on an average?

A. From \$2.95 to \$5.50, varying. The five dollars and a half was exceptionally hard rock. It was this side of the Alleghany, which is entirely above the line of this tunnel, and would not be encountered by it, I am very sure, because we find the slate rock under this tunnel. It was known as the Little Alleghany, a little immediately east of it across a ravine, at a depth of 180 feet; and rather than build a culvert we tunneled through it, and found it to be the slate that we had in the Alleghany. In other words, the sandstone lies higher than the slate—overlies it.

By the CHAIRMAN:

Q. What do you estimate the expense per linear yard for arching?

A. For such a tunnel as that I have not been called upon to make any estimate. In such a tunnel as that it is worth about ten dollars a cubic yard. I suppose the thickness of the arch would be from $2\frac{1}{2}$ to 3 feet. The excavation of that tunnel would be let at under three dollars a yard. The cheapest tunnel you could find would be through the rock that would be self-supporting and hard enough for that purpose. It takes away the trouble of temporary supports and the difficulties of that character. In our tunnels we have made, with hand labor, as high as 275 feet a month from each heading.

By Mr. DAVIS:

Q. What size tunnel?

A. About 30 feet where we take them out for arching, and 26 feet where they do not require arching.

Q. You have heard the estimate for this excavation. Have you any doubts in your own mind as to the amount?

A. I consider it sufficient, sir, even if the tunnel is to be arched from end to end.

Q. You know this ground, of course, do you?

A. Yes, sir. When I say under three dollars, I think it could be let at considerably under three dollars. All the people on our work made money at the price they did the tunneling. It is very favorable, all that section. I think the price of excavation as given by Mr. Lorraine is altogether higher than is necessary under any circumstances. It was five dollars a yard. There is no difficulty in making a rapid penetration for that tunnel, and doing it in the time stated. All that is necessary is to have sufficient shafting to carry the material off.

Q. Do you think the time sufficient that was given for the construction?

A. Yes, sir. There is no difference that I know of in the time of running single and double-track tunnels, where it is self-supporting, that is not in favor of a double-track tunnel, except the moving of the stuff out of the shafts. You must have room to carry out in a single-track tunnel the amount of headings removed, which is the same for a double as for a single track. That is a narrow drift first cut through, and then the operation of removing the remainder of the tunnel varies very little, except the cost of keeping the work right, &c. And in open cutting that sort of rock is excavated for 40 and 60 cents a yard. If the rock is too soft, then it requires temporary support, and in that case the progress is sometimes slower.

By Mr. NORWOOD:

Q. Did you find any fissures in that tunnel?

A. No, sir; we have found some in the limestone tunnels, but they have troubled us more by letting water in than out. The water generally comes from above.

By Mr. SHERMAN:

Q. There are no openings in any rock, I suppose, except limestone?

A. I have not seen any, sir. There are very small cracks and seams in the rock sometimes, but I should not suppose there would be any trouble in that tunnel.

Q. Is there any granite in the line?

A. No, sir; it is away above the granite.

By Mr. DAVIS:

Q. Do you know of any canal-tunnel of any length?

A. I am not very familiar with canal operations. There is a long tunnel in England. The tunnel on the Chesapeake and Ohio Canal is 3,600 feet long.

Mr. CARRINGTON:

I will venture to say that Colonel Whitcomb, as chief engineer of the Chesapeake and Ohio Railroad Company, has had more connection with the construction of tunnels than any other engineer of any eminence, and I am sure that as to the practical questions in connection with their construction, he is a very thoroughly informed man. I only mention that, that the committee itself may understand it.

By the CHAIRMAN:

Q. Will you please inform the committee upon what tunnels you have been engaged?

A. Only on our line. I built nineteen under my own observation. The longest, though, is only a mile and a quarter.

By Mr. NORWOOD:

Q. In this long tunnel we have been speaking of particularly, did you find no difference in the geological formation on the face of the mountain and in the interior?

A. Whenever I have gone over a line of a tunnel I have been able to come at a close estimate of what we would find underneath; but I have not been over this.

Q. I mean going into the face and then into the center of the mountain, did you find a different formation?

A. Yes, sir; very frequently. The stratification of the Alleghanies is a great deal distorted; but my impression is that this tunnel would be almost entirely in the slate and in the shales which accompany the

slates. Those shales are pretty hard rock. I do not think you would meet any limestone or any pure sandstone. Still I give that opinion with a great deal of hesitation.

Q. What is the depth of your shafts?

A. At the Alleghany the deepest was only 150 feet. The one at the Great Bend tunnel was 375 feet; that was beyond the Alleghany. That shaft at the Great Bend is one-half as deep as mentioned for this tunnel, and it took us about six months, at the rate of about 60 feet a month. In that shaft we had some of the hardest sandstone I ever encountered; but other parts of the rock were very favorable—red shale. Sometimes we made as high as 70 or 80 feet a month, and I think never under 40.

By Mr. SHERMAN:

Q. Can you give us the length of line from Richmond to Covington?

A. Four hundred and twenty-two miles, striking the Ohio at Huntington, thirty-eight miles below Point Pleasant.

Q. What is the general course of that road as compared with the proposed canal?

A. It is almost alongside of it after you reach Covington.

Q. It cuts across the bend; it does not go to Richmond?

A. It goes entirely north of the canal after leaving Covington, and passes by Stanton over the mountains, the canal following the James River.

Q. What are the highest grades you have going westward from Richmond?

A. We have grades as high as 80 feet between Stanton and Clifton Forge; that is about three miles above the junction of the Jackson River and the Cow Pasture. That is at the head of the James, where we strike the waters of the James River.

Q. Near Covington?

A. Yes, sir.

Q. How many miles have you of that?

A. I could not tell you; we have several short grades. The longest grade we have is six miles.

Q. What is the highest grade going eastward?

A. Seventy feet this side of Clifton Forge. After we strike Clifton we ascend the Alleghany sixty feet to the mile, and west of the Alleghany we have nothing over 30 feet.

Q. Are railroads contemplated, or plans made for railroads west of the Ohio River; and if so, to what point?

A. Yes, sir; our company have nearly completed arrangements to open a road from Huntington to Lexington, Ky., on the south of the Ohio, and they have also made surveys and raised some means toward a line on the north side of the Ohio, and running down the Ohio to Portsmouth, from there to Dayton, and from there to Cincinnati.

Q. Have you run your roads long enough to give us an idea of the general character of the productions that come over them?

A. Not from the West. We have imperfect connection with the Ohio River at present, which is subject to droughts, as you are aware, but we are carrying some grain. Bacon and things of that sort are brought from Cincinnati to the East.

Q. Do you carry grain from Cincinnati?

A. We carry grain from the western part of the line. I do not know that it comes from Cincinnati. I am not connected with the transportation department.

By Mr. CONKLING :

Q. What length of road is completed ?

A. Four hundred and twenty-two miles to Huntington. The company have made a part of the line from Lexington eastward to Mount Sterling, 30 miles I think. There are about 80 miles left there to be finished.

By Mr. SHERMAN :

Q. Where does your road strike the James River ?

A. We do not touch the James proper, but we touch the principal branch of the James, the Jackson River. We reach that at Covington, and follow it fourteen miles to Clifton Forge, and there we leave it and go across the country.

Q. What is the eastern terminus of your road ?

A. Richmond at present. They are thinking of running it down the peninsula to some point on the Chesapeake Bay. I do not think they have determined definitely where.

Q. That road is not built ?

A. No, sir. We have made this summer a location to Yorktown. The company purchased some property there ; perhaps that would be the point.

Q. What authority have you for the building of your roads ?

A. The legislatures of Virginia and West Virginia.

Q. Are those old charters purchased or consolidation, or is it one continuous charter ?

A. The road was built from Richmond to Covington under the charter of the Virginia Central Railroad under the laws of Virginia before the war. The State of Virginia was then engaged in building what was known as the Covington and Ohio Railroad, which extended from Covington westward to the mountain-line. After the war was over the two States were not in condition to finish this road, and they offered it to any parties who would finish it, and the Virginia Central Railroad Company had the right to become a party to finish it, and in case they did agree to finish it it was to be consolidated with the Covington and Ohio Railroad under the new name of the Chesapeake and Ohio. The Virginia Central Railroad Company did undertake to finish it and have done so.

Q. Is this road intended to be a competing line of road for through traffic with the Baltimore and Ohio, Pennsylvania Central, and New York Central ?

A. Yes, sir ; it is.

Q. That is the design ?

A. Yes, sir.

Q. The connections westward are to embrace the whole stretch of country from the Mississippi to tide water ?

A. Yes, sir.

Q. It is completed only to Huntington ?

A. We have a charter from Virginia to extend the line from Clifton Forge down the James River to tide-water, and the company expect to build that road ; that is to say, to have but one summit, so to speak, between the waters of the Chesapeake and the Ohio. That would be at the White Sulphur Springs.

Q. What advantages has your route, as you claim, over any of the other routes, the Baltimore and Ohio, or any other competing line ?

A. We have lower grade. We cross the Alleghany 600 feet lower than the Baltimore and Ohio, and we approach it with only a 30-foot

grade, and that for a limited distance. From the foot of the Alleghany, on the westward side, we have only 30 feet. The Baltimore and Ohio has 116. We have these heavy grades east of Clifton Forge, 70 feet to the mile, but the company has obtained a charter to run down the James River, or by any other route of easier grade to the Chesapeake, and they expect to make that road. When it is done there will be nothing over 30 feet, I am sure, between the Ohio River and the Chesapeake.

Q. Give us any advantage which you claim for your line as a competing line for through traffic from the West to the East.

A. There is no other except the climate. I suppose we have some advantage in distance.

Q. Do you know what that is?

A. Without referring to the publications of the company I cannot state that. There are, however, some advantages.

By the CHAIRMAN:

Q. To what given points.

A. From the Ohio River to Cincinnati, for instance, or Saint Louis.

By Mr. SHERMAN:

Q. What advantage have you in climate?

A. It is a milder climate; never obstructed by snow.

Q. Are the mountains never obstructed by snow?

A. We were laying track all last winter, and there was not a snow-plow on our road. There is not a snow-plow on the Chesapeake and Ohio Road. We never have had occasion to use one.

Q. Do you claim any advantage by your route on account of facility for ports of entry—water-communication?

A. By the Chesapeake Bay, Hampton Roads, and the York River, you can get any depth of water that any vessel would desire, of any size, and it is easily approached from the ocean.

Q. Have any arrangements been made for loading or unloading wheat on vessels?

A. They are in contemplation, sir. We are only recently opened, and we are not prepared as well as we will be.

By Mr. DAVIS:

Q. I do not recollect whether you stated your opinion as to the time in which this long tunnel could be completed.

A. My impression is that it could be done in four years, or rather less. It would be safer, perhaps, to say four years. About these works there are always a great many contingencies; it might take five years. Persons who take hold of it ought to be well supplied with all the material in the start, and of course for such a job as that they would have to have the very best appliances. It would not do to have a stoppage. You must have the best engines and everything of that sort.

Q. And under proper management I understand you your maximum would be five years?

A. Yes, sir; I should think five years ought to do it.

By Mr. CONKLING:

Q. That is allowing for what length of tunnel?

A. Seven thousand five hundred feet between shafts. The test of that tunnel would be that 7,500 feet between those two deep shafts.

By Mr. DAVIS :

Q. From your experience on the top of the mountain could you give us an idea of the length of time each year you would be hindered by ice on the canal ?

A. No, sir. We have some cold weather at the White Sulphur Springs. I never thought of that subject. I should not think more than a month, or six weeks at the outside. That is the impression I would have about it, without being positive, and without ever having thought of the subject particularly. Perhaps from about Christmas to the middle of February. I should think that that would be as long as it would be obstructed, and many winters you would not be obstructed half that time. There will be no trouble in making that tunnel, I can say to the gentlemen of the committee, and it is only a question of time and money.

Q. And I understood you that the estimate, in your opinion, was ample ?

A. I think so, sir. I think I should be willing to take the tunnel at that price.

By the CHAIRMAN :

Q. It is ample, even if it were shale throughout ?

A. Yes, sir. My impression is that about \$14,000,000 would make it and arch it.

Q. And you consider that a most expensive tunnel ?

A. Yes, sir. I would rather take the chances of getting through quicker with rock that would be self-supporting.

By Mr. DAVIS :

Q. I presume you have given the question of the supply of water no thought ?

A. I have read pretty much all that has been written on that subject, and I have never doubted that there was a supply of water there for canal purposes. The evidence is strong in favor of it.

Q. You know that country well ?

A. Yes, sir ; but I rely entirely on the statements of the engineers. I knew Mr. Ellet very well. I was his assistant for a great many years. He never had any doubt about it, and I consider him very good authority. And Mr. Fiske, still better, connected with canals, never had any doubt about the supply with the higher level on the James River Canal, but he did have on the Chesapeake and Ohio Canal. He thought it was a doubtful question.

Q. You speak of in crossing the mountains ?

A. Yes, sir ; that is what he referred to in the summit between Pittsburgh. Mr. Fiske told me that in the course of conversation.

Q. Mr. Fiske was engineer on each of the canals at different times, was he ?

A. I do not think he was ever permanently connected with the James River Canal. He was the engineer of this railway west of Covington before the war, and was not connected with the canal at all, so that his opinion was an entirely disinterested one, and it was worth as much as that of any other man in America on that subject. He never made a statement, except in the most cautious way.

General HERMAN HAUPT :

Mr. Chairman, I will state that I became connected with the Hoosac tunnel, as contractor and engineer, in the early part of 1856, and com-

menced the tunnel, no work having been done previous to that time, except at approaches. It was prosecuted under a loan of credit made by the State of Massachusetts, to the extent of \$2,000,000, which assistance was rendered in sterling bonds, and issued from time to time as the work progressed. The work was very much embarrassed for many years, owing to financial difficulties, and to the onerous conditions of the loan act. The State imposed conditions which it was exceedingly difficult to fulfil, and very little assistance, in fact no assistance whatever, was derived from the Troy and Greenfield Railroad Company, with whom the contract had been made; so that the contractors were compelled to expend some \$400,000, raised from their own credit and resources, before any portion of the State loan became available.

During the panic of 1857 the work was suspended, and was not resumed for nearly a year, which accounts for the slow progress made in the early portion of the work. The work was not placed upon a proper financial basis, or in such a condition that the contractors could carry it on without embarrassment, until the year 1860, when, as the result of a very long investigation by a committee appointed by the legislature, they became satisfied that a change in the conditions of the loan act was imperatively required, and the chairman of the committee came to me with the remark that he thought it was the interest of the State, and the interest of the contractors, and the interest of all parties that we should be relieved from the embarrassments under which we labored, and that the State of Massachusetts should really do what it proposed to do, extend assistance to the work, instead of throwing unnecessary obstacles and impediments in the way. The committee, as the result of that investigation, had become fully satisfied that we were prosecuting the work on the Hoosac tunnel at a cost less than five dollars per cubic yard, and, at that rate, the whole cost of that tunnel would have been less than a million and a half of dollars, although now, owing to the changes that have taken place under the mismanagement in the hands of State commissioners, &c., the cost, with interest, may fall very little short of \$12,000,000. The work was actually carried on at that time at a rate of progress and at a rate of cost that, in the opinion of the committee, and of several preceding committees, would have insured the completion of the tunnel without exceeding the original limits of the State loan of \$2,000,000. It was the subject of annual investigation by legislative committees, appointed usually in a spirit of antagonism and hostility; but, as the result of the investigation they would generally make a unanimous report sustaining the administration of the work, and recommend appropriations to carry it through.

It is proper to remark that the size of the tunnel, as originally contemplated, was for a single track. The width was 14 feet and the height 18 feet. The number of cubic yards per linear foot of tunnel was 10, making the cost of the tunnel \$50 per linear foot. The material of the tunnel consisted of talcose slate lying in a nearly vertical position, the inclination being about 10 degrees only from vertical, and made a perfectly self-sustaining roof, requiring no arching whatever, excepting a small portion, less than half a mile, at the west end of the tunnel in North Adams, where the material was a limestone-clay and gravel, and where very serious difficulties were encountered for some time. This material at the west end was mixed with bowlders of rock, which added very considerably to the expense of that portion. In consequence of these difficulties, and to gain time, we sunk a shaft at the west end, so as to reach the talcose slate and to commence tunneling from the shaft, which was 325 feet deep. The work was carried on from both ends. It

was not my purpose to sink a central shaft. I was always opposed to that project, because, with the aid of machinery, which I was then in process of developing, I was satisfied that very little advantage would be derived from a shaft. The shaft would have been about 1,100 feet in depth, and the cost of excavation and the length of time required would have been such that I expected, as in the case of the Mont Cenis tunnel, to carry the work through from the two ends.

I commenced, soon after my connection with the work, to develop machinery for the tunnel and pneumatic drills, and had made considerable progress at the time of the suspension of the work in 1861, which was caused by the act of Governor Andrew. The progress made in drilling-machinery was such that we were able to drill about an inch and a half or two inches a minute in solid granite, but still the machinery was not sufficiently complete to make it proper at that time to use it in connection with tunneling operations.

My plans were, in some respects, very different from those adopted at the Mont Cenis tunnel, and from those adopted by the State commissioners subsequently. I proposed to make a direct application of steam, while they have made use of compressed air. Compressed air is a very desirable motor in such cases, but the expense was a great objection when all the funds had to be raised by individuals, and when we had not either the treasury of the State or of the United States to fall back upon. But I was satisfied that with the use of machinery we could make very rapid progress in the tunnel, and even without power-drills, with a more perfect organization, more powerful explosives and electrical blasting. I am confident that, if no interruptions had been experienced, the tunnel would have been finished before now, the trains would have been running through to-day, and the original estimated cost of \$2,000,000 would not have been exceeded. The maximum progress actually made by hand-labor was about 3 feet a day from each face, or, say about 25 feet a week from each face—50 feet a week from both faces in the tunnel. We would have made a progress of about 200 to 300 feet a month with proper organization, full force, and continuous work. The rock was tolerably hard: and in softer rock the progress would have been much more rapid.

The progress made in the tunnels of the Chesapeake and Ohio Railroad has been very rapid and satisfactory and better results have been attained there than in any tunneling operations with which I am familiar. The progress has been more rapid and the cost less. They have been conducted with very extraordinary economy under the direction of the chief engineer, H. D. Whitcomb, the tunnels costing from two to four dollars per cubic yard for the excavation.

By Mr. SHERMAN:

Question. Are you acquainted with the locality of this proposed tunnel?

Answer. Not intimately, sir. I have been spending a good many summers in the mountains of Virginia, and am familiar with the general character and formation of the ground. It is sandstone, shale, and slate.

Q. Do you regard that shale-rock as presenting any very serious embarrassments?

A. It is almost the easiest rock for tunneling that can be found

Q. But not self-supporting?

A. No, sir; and I suppose, in consequence of the large area of this tunnel, it will require to be arched throughout. I do not think it would

be safe to calculate upon anything else. It would have to be timbered during the progress of construction, and lined afterward. I apprehend no difficulty of leakage, for I concur in the opinion of Mr. Whitcomb, and I have never known a case of water running out of, but always running into, a tunnel, except from the ends or in cavernous limestone formations.

Q. Do you regard timbering as very expensive?

A. Not in that locality where the timber is easily procured. It would be timbered with rough timbers, and not add very materially to the expense.

By Mr. DAVIS:

Q. You know the estimate for this tunnel?

A. No, sir; I have not looked into the figures in detail.

Q. Have you looked sufficiently to give us your idea whether it could be built from the estimate?

A. I have no doubt that it can from the statement of the price per cubic yard made in my presence here. I have no doubt that the tunnel can be excavated at less than \$5 a cubic yard. It will require, of course, very excellent machinery at the shafts in order to remove the material as fast as it can be excavated. The progress of a tunnel is measured by the progress of the heading. It is always possible to put on a sufficient amount of force to take out the bottom as rapidly as the heading can progress, so that a large tunnel does not require more time in its excavation than a small tunnel, provided you have sufficient capacity of machinery at the shafts to remove the material as fast as it can be excavated. It must be run back in cars and hoisted and carried away.

By the CHAIRMAN:

Q. What do you mean by taking out the bottom?

A. In driving a tunnel there is always a small area called a "heading" driven in advance, usually six or seven feet high, and about ten or twelve feet wide. This is driven in advance of the workers, and the progress with that heading measures the progress of the work. The balance of the work, called bottom, is taken out by other forces following after the heading gangs, and a sufficient force can always be put on to take out that material as rapidly as the heading can progress.

By Mr. DAVIS:

Q. Have you an estimate of the time that it would require?

A. I should think from the time when the shafts were sunk to the grade of the tunnel it ought not to require more than four and a half or five years at the outside, even taking into consideration all the difficulties that we may reasonably expect to encounter in the progress of such a work. I should think six or seven years at the outside would be sufficient. It is only a collection of smaller tunnels, and in this particular presents much less difficulty and uncertainty than the tunnels of the Alps or Hoosac.

By Mr. NORWOOD:

Q. What was the length of the Hoosac tunnel?

A. A little under five miles.

By the CHAIRMAN:

Q. What was the depth of their longest shaft?

A. It was nearly 1,050 feet. The State sunk one and I sunk another at the west end; not because it was necessary in any other view excepting to get into the solid rock of the mountain, and to get away from

that loose material which gave us great annoyance at the west end. The State sunk the central shaft afterward, and I understand that the workings have now been extended to such a point that they are within about 500 feet of meeting between the central shaft and the west end of the tunnel. The workings have met at the east end.

By Mr. DAVIS :

Q. What is your estimate of the working time on the Hoosac tunnel?

A. That would be a very difficult question to answer; it has been subjected to so many delays. The progress can, however, be readily calculated—by machinery, as high as 40 feet a week at each face, and by hand-labor, 20 to 25 feet a week. The progress would have been accelerated by keeping a constant force employed, but owing to pecuniary and other difficulties it was not kept full, so that the progress actually made was no indication of the progress that would have been made under more favorable circumstances. About three feet a day at each face in the Hoosac tunnel, by hand-labor, was full progress, as we were situated.

By Mr. NORWOOD :

Q. How many faces did you have in that tunnel?

A. There were four faces part of the time, though I proposed to work it only with two faces, one from the west shaft and the other from the east end.

The cost of the work on the Hoosac tunnel was very greatly enhanced after it was assumed as a State work. Governor Andrew had an idea that the only way in which that work could be properly carried on was by commissioners, and, in fact, declared to members of the executive council that he would veto any bill that did not put it into the hands of commissioners. That was done in 1862, and I made an estimate afterward of the progress and the expenditure per cubic yard, and it run up to \$90 under the management of the commissioners. A large amount of that, however, was in unnecessary outside work, building a cut-stone dam across a river, &c. Afterward it was put in the hands of contractors again. The expenditure under State management was so great that the people became dissatisfied.

The area of the tunnel was enlarged, and the price increased considerably. I think the contract price for finishing by present contractors was somewhere between four and five millions; but what that would amount to per cubic yard I do not remember.

By Mr. SHERMAN :

Q. What railroad are you connected with?

A. I am at present general manager of the line from Atlanta to Richmond, including the North Carolina railroad. It is operated as one line, although several different organizations are included.

Q. Is that the Pennsylvania company?

A. The Pennsylvania have an interest in it.

Q. What competing line have you through the State, in a southwestern direction, with your line?

A. Regarding Atlanta as a competitive point, we have quite a number of competing lines. From this point (Richmond) is the Atlantic, Mississippi and Ohio, the Kenesaw route so-called, leading to Atlanta. Another line competing with us is the coast line running from Richmond via Petersburg, Weldon, Columbia, and Augusta to Atlanta. The other lines are part rail and part water lines running by the way of the Sea-board and Roanoke Road and the bay-line of steamers; other

lines running to Wilmington, others running to Charleston, others to Savannah; lines running from those ports also to Atlanta, making an active competition for the trade of the Southwest there.

Q. What is the line of the Orange and Alexandria?

A. That line connects with the Kenesaw route, the Atlantic, Mississippi and Ohio, and that line is to be extended from Lynchburgh to Danville, where it will connect with our line, but that is not yet completed.

Q. Does the Baltimore and Ohio line compete with your Pennsylvania line?

A. The Baltimore and Ohio line does not enter the territory of Virginia except west. It extends from Baltimore westward.

Q. Have they not a line running from some point on the Baltimore and Ohio Road either in process of construction or completed?

A. It is understood that the Baltimore and Ohio Railroad Company has been assisting by an advance of funds and controls the Lynchburgh and Danville, and the Orange, Alexandria and Manassas. It has now a new name, and so long a one that I do not remember it just now. Washington City, Virginia, Midland and Great Southern, I think it is.

Q. You then have three of what you would call competing lines across the State of Virginia running in a southwesterly direction?

A. The road with which I am connected does not run across the entire State of Virginia. It runs south, from Richmond through Danville and Greensborough, through North Carolina, thence across the State of South Carolina to Atlanta, Georgia.

Q. It connects here with the Fredericksburg Road?

A. Yes, sir.

Q. Is not that part of the line?

A. That road is owned by other parties with whom we have not very satisfactory connections. We often have difficulties in arranging through schedules.

Q. Does the Baltimore and Potomac Road not connect?

A. That is another different organization and connects with the Fredericksburgh Railroad, not with ours.

Q. Is not there a connection by interest, a running connection?

A. The Baltimore and Potomac Road is directly connected by interest with the Pennsylvania Road, and also the Pennsylvania Road is directly connected with the Northern Central Road and with the Richmond and Danville Railroad, but we have been laboring in vain for years to get a direct connection under one management or control between the Baltimore and Potomac Road and the Richmond and Danville and its extensions south. The intervening link is the Richmond, Fredericksburgh, and Potomac Railroad, not under the control of these corporations.

Q. Is that a separate corporation?

A. Yes, sir. All efforts thus far to make entirely satisfactory arrangements with that company either to lease and operate, purchase or prorate, have been, as I am informed, unsuccessful.

By Mr. NORWOOD:

Q. Who controls that?

A. Mr. Robinson, of Philadelphia.

By Mr. SHERMAN:

Q. What is the effect of consolidating these lines; either by a community of interest or running arrangement?

A. I think the effect of consolidation is very beneficial upon the lines

themselves, and also upon the populations locally interested, and upon the country tributary to the line.

Q. How as to the rates of freight?

A. The rates of freight can be, and generally are, reduced. The consolidation of the various lines now controlled by the Atlanta, Mississippi and Ohio Road, under General Mahone, has led to a considerable reduction in the freights upon that line, and the practical consolidation of the lines south under one management, between Richmond and Atlanta, has already led to a considerable reduction, and in a revision of the toll-sheet just completed there will be still further reductions made in the rates of freight. As I have stated that the Pennsylvania Railroad Company will probably control this line, it seems necessary to explain that I was connected with the Pennsylvania Railroad Company as chief engineer, and also as general superintendent, for about ten years, and the policy adopted there, and which will no doubt be introduced here, was to develop the country as rapidly as possible by the lowest rates of transportation that the business would bear. I remember, as pertinent to the questions now under consideration, that it was a subject of animated discussion twenty-five years ago in the Pennsylvania Railroad board whether a low rate should be established to admit of the transportation of coal, and the position was taken that coal and such articles could not be transported on railroads; that the canals, such as we had then in Pennsylvania, would answer very well for the transportation of such articles, but railroads must be used exclusively for passengers and light freights; that anything carried at a less cost than two cents a ton a mile would be at a positive loss; the cost, then, exceeded two cents a mile, and at that time there was a tonnage of only a hundred thousand tons over the Pennsylvania railroad. In order to demonstrate the practicability of carrying coal I made an analysis of the business of the preceding year, separating those items which would be increased by an increased business from the general and other constant expenses, which were independent of the volume of tonnage.

After making a careful analysis I succeeded in demonstrating that the actual cost of the transportation of coal over the Pennsylvania railroad would not exceed about seven or eight mills a ton a mile, while it would bear a price for freight of a cent and a quarter. Subsequently, the Pennsylvania Railroad Company engaged in the coal transportation, and now their whole average charge for transportation of all classes of freight is only one cent and four mills for all the business of the road, which exceeds 8,000,000 tons per annum. The actual cost of service with a smaller volume of tonnage exceeded two cents a ton a mile as previously stated.

It is proposed to pursue the same policy in the South so far as the influence of the Pennsylvania Railroad Company can extend, and before taking charge of this line I may state, as it may be a matter of interest, that I had a conversation with Mr. Thomson, who sent for me, he being the president of the Pennsylvania Railroad Company. He expressed a very warm interest in the South, and a desire to increase and develop the business, and requested me to direct my attention to that as fully as possible. He stated that he considered the rates of transportation entirely too high, and it was desirable to reduce them as rapidly as the development of business would justify, so as to still be able to maintain revenue enough to pay the expense of operating the road and the interest on their debts; but, so far as practicable, to pay particular attention to that point and endeavor to accomplish that object, and I

will say that the development of the resources will be the policy of the line. The increase of business by low rates as fast as practicable is the great object that is sought for.

By Mr. SHERMAN:

Q. What competing lines have you to help you along in that desire?

A. We have Gen. Mahone's line, the Atlantic, Mississippi and Ohio, running from Norfolk across the State to Chattanooga, and that is the only line which comes in direct competition with us in Virginia. The Chesapeake and Ohio Road reaches a different territory in the West and we regard them rather as an auxiliary. We distribute produce from the West brought by the Chesapeake and Ohio Road, and last spring we carried as many as twenty or thirty car-loads a day brought by them to Richmond for distribution in the South.

Q. Are you familiar with the line of the Chesapeake and Ohio Road?

A. I have been over it as far as White Sulphur Springs, not beyond that point, and three years ago surveyed a parallel line a short distance south of it.

Q. Are you able from your knowledge of the country to give us any general view of the comparison of facilities and advantages it has in competing with trade from the West to East. I mean, taking as far west as Cincinnati, what advantages has it over the Pennsylvania line, or over the Baltimore and Ohio line, or what advantages have they over it?

A. The only physical advantage that it has is its low grade. Its maximum grade from the Ohio River east is but 30 feet to the mile, and that is maximum grade against the tonnage; while, if the new low-grade line should be made from Clifton Forge to Richmond, the grades will be generally descending in that direction, and there will be no higher grade encountered. The maximum grade on the Pennsylvania road eastward is $52\frac{8}{10}$ feet to the mile. The maximum grade of the Baltimore and Ohio, I think, is 116 feet to the mile.

By Mr. DAVIS:

Q. Eastward?

A. I am not quite certain as to that, whether it is in one direction or both.

By Mr. SHERMAN:

Q. How is it in regard to distance from Cincinnati to Richmond, and Cincinnati to Philadelphia, or Cincinnati to Baltimore?

A. I could not answer immediately without referring to the guide-books. My attention has not been called to that point particularly. I should think the distance to tide-water would be rather less by the Chesapeake and Ohio Road than by the other lines. The information is very easily obtained, however.

By the CHAIRMAN:

Q. What are the charges per ton per mile on your road on the lowest class freight?

A. They vary according to circumstances. We have offered to carry iron ore as low as a cent and a half per ton per mile.

Q. At what price do you carry grain?

A. There is very little grain carried. We carry some in the shape of flour or meal. It comes in the lowest class.

Q. Do you remember what your charges are for the lowest class?

A. I think for distribution to local consumers along the line the lowest charge is about three and a half to four cents per ton per mile.

Q. I meant for through freights?

A. They are governed entirely by competition; we always carry as low as by any other line.

By Mr. CONKLING:

Q. Cannot the Chesapeake and Ohio Road carry freights cheaper than these other roads, aside from the grain?

A. It might to some extent, but the obstruction from snows, except in high latitudes, is not very serious. The machinery is of such a character and the trains run with such frequency on these roads that very little difficulty is experienced on the Baltimore and Ohio and Pennsylvania lines.

Q. Obstruction from temperature, though, is a great element in winter, is it not?

A. It is not very serious with the steel rails, which are now used on these lines.

Q. But as to the rolling-stock; the running-gear of trains?

A. No calculations or estimates have ever been made indicating that there is a very serious difference in such expenses on account of temperature. I have had no experience in roads farther north than the Pennsylvania Railroad, and during my connection with that road it was not observed that there was any very material difference in expense at that time, nor have we noticed anything in the South, with the exception of the slides that occur in consequence of the frost and wet weather. That would add in some cases materially to the expense of operating a road in the winter season.

By Mr. SHERMAN:

Q. What is the general price for carrying passengers in the South?

A. About 4 to 5 cents per passenger per mile for local, and about three cents for through.

Q. Why is it so much greater in the South than in the North?

A. In consequence of the very sparse population, and the inability to meet expenses even at those rates, and because the business is not large enough to justify a reduction, and could not be materially increased thereby. The population is limited, and not of such a character that there would be an increase of travel consequent upon the reduction of rates; it is not expedient, or indeed practicable, to reduce them. Very few of the roads in the South are earning more than enough to pay operating expenses, and a large proportion of them do not pay the interest on their debts.

Q. What is the general rate of freight per ton per mile as compared with northern roads?

A. Very much higher. The average on most of the southern roads will run from 4 to 5 cents per ton per mile for local freights, while on the northern roads, the Pennsylvania Road particularly, the same class of freight would be carried for less than 2 cents per ton per mile.

Q. It is then double in the South?

A. I should think that would be a fair estimate.

Q. What reason do you give for that?

A. The small amount of business and the necessity of charging higher rates in consequence. For example, the Richmond and Danville Road carries 130,000 tons. The Pennsylvania Railroad carries 8,000,000 tons.

By Mr. CONKLING:

Q. Have you no maximum by charter as to passengers or freight, of what you may charge a mile?

A. There are limits of charges upon many of the roads. I am not able to say whether there is on the Richmond and Danville or not; the charges are less than on other roads in the South.

Q. Is there not as to your own road?

A. I am speaking now of our own road. I have not examined that point; the question has never been raised. I have only been connected with the line about a year. If there is a limit I have no doubt we are very much below. There are limits on some roads, I know.

By Mr. SHERMAN:

Q. What is the comparative cost of building a railroad in the South and in the North? Is it not much cheaper in the South?

A. That depends upon circumstances.

Q. Is not the country generally more level, and timber cheaper?

A. Along the Atlantic States the cost of building roads in the South is generally cheaper than in the North, but the east and west lines have cost about as much. The most expensive road in the United States yet constructed was part of the Chesapeake and Ohio Road. The mountain division of it has cost \$200,000 a mile, while the cost of crossing the Alleghany Mountains on the Pennsylvania Railroad is very considerably less; less than half that cost.

By Mr. CONKLING:

Q. Why was that?

A. It was in consequence of adopting a line of very low grades, and very favorable characteristics, and a more expensive country over which to locate the road. The road is a better road, so far as grades are concerned, than the Pennsylvania Road; $52\frac{8}{10}$ on the Pennsylvania, and on the Chesapeake and Ohio 30 feet.

By Mr. NORWOOD:

Q. Is not the right of way in the South much cheaper than in the North?

A. Yes, sir; it is in many cases given without charge; but it is also frequently given without charge in the North.

By the CHAIRMAN:

Q. Do you prorate with any water line?

A. With several of them. We prorate, in fact, with all the water lines with which we come in connection.

Q. On what terms?

A. The usual prorating distance for the river and bay lines is about two miles for one, and the ocean steamers about three miles for one.

By Mr. SHERMAN:

Q. Three of water to one of rail?

A. Yes, sir. I think that is about the ratio with the Savannah and Charleston and Wilmington lines, three of water to one of rail; on the York River lines, including the bay line, prorating at $2\frac{1}{2}$.

By Mr. DAVIS:

Q. Who pays the terminal charges; the transfer charges?

A. There is a small arbitrary sometimes exacted, and sometimes not. There are also certain arbitraries charged for transshipment; for the use of the connection track in Richmond when freights come by rail.

That arbitrary depends upon local circumstances. Very generally no arbitrary is charged for terminal charge.

Q. I understood you that the reason that the Pennsylvania Road, and other large roads, charge less in the North than you do in the South was because of the large amount of business they did. Now, how about the smaller roads in the North which do not do any more business than yours, when their charges are, perhaps, one-half of yours? How do you account for that?

A. I am not aware that such is the fact. I have not examined particularly with reference to that point in order to obtain information in regard to it; but there are very few roads in the North that are not located and constructed through populations much more dense than can be found in the Southern States. In the Southern States the populations are very sparse indeed. There are very few manufacturing operations carried on, the population is almost entirely agricultural, the amount raised is very limited, the amount required is also limited, and it is a population, moreover, that is not in the habit of moving about a great deal; so that it does not furnish a large amount of passenger business or freight transportation to the railroads.

Q. I should probably have said West instead of North. Do you know any road in the North, or in the West, no matter how short, that charges five cents a mile for passengers?

A. I have not looked into that question. The five cents is only charged for local passengers, and generally for short distances. On part of our line it is but 3 cents.

Q. Do you know any road, North or West, that charges four cents per ton per mile for freight as a rule?

A. I have not had occasion recently to examine the toll-sheets of roads in that locality with which we have no connection; my attention has not been directed to them.

By Mr. NORWOOD:

Q. You mentioned Atlanta as a southern competitive point of these two roads in competition with yours. What northern points of competition are there?

A. Nearly all the travel between the South and North centers in New York. New York might be considered as a northern competitive point, and the various lines running to and from New York. Most of the freight lines run from New York by water to the Atlantic ports, and from those Atlantic ports to Atlanta, or New Orleans, as a southern terminus.

W. P. BURRELL:

Mr. Chairman, for the first seven months of 1873 the tax paid upon tobacco in the city of Richmond was \$2,058,131.10. Taking that as an average, five months additional would give the sum of \$3,558,131.12.

By Mr. DAVIS:

Question. Does all the tobacco manufactured here pay its tax here?

Answer. Yes, sir; under the law of June 6, 1872.

By Mr. SHERMAN:

Q. Give the number of pounds that that tax indicates.

A. Seventeen million seven hundred and ninety thousand six hundred and ten pounds.

Q. That is chewing-tobacco?

A. Yes, sir; we make very little except chewing. I do not suppose,

indeed, there is more than 500,000 pounds of cut tobacco; but it all bears the same tax now, under the act of 1872. The amount of money paid as tax on tobacco in Richmond from May, 1867, to July, 1873, was \$10,124,576.03; but that is not a fair exhibit of the amount of revenue paid by the product of this city, because there was a large shipment in bond to all the ports of entry down to July, 1872. Under the act of July 20, 1868, there were shipments in bond. This tobacco, of course, when it went out of the country from New York, Baltimore, and Boston, paid no tax. If withdrawn from those bonded warehouses they paid thirty-two cents. There was twenty-one million and some hundred thousand pounds of tobacco shipped from Virginia the year ending the 30th of June, 1872. There was about one-tenth of that amount shipped to foreign countries. There are three other large points of manufacture of tobacco, Lynchburgh, Danville, and Petersburg.

By Mr. NORWOOD :

Q. Where did you get those figures?

A. From the custom-house, sir.

LEWIS D. CRENSHAW :

By the CHAIRMAN :

Question. State the capacity of the Richmond flour-mills for a day, a month, or year.

Answer. I think the capacity of the present mills is about 650,000 to 700,000 barrels of flour a year. The wheat coming to the city is so much reduced, or the production since 1861 has been so much reduced, that none of the mills have done more than probably one-third of a year's work—between a third and a half.

Q. Can you give the actual production of a single year during the last year or two?

A. I ought to be able to do that, but I do not carry them in my mind particularly. I think that the production in the city of Richmond, last year, was about somewhere in the neighborhood of 230,000 barrels.

Q. Is that production from Virginia wheat?

A. From Virginia wheat. The mills are making very great efforts, now, to bring wheat from other States.

Q. What States do you get it from and by what routes?

A. From Ohio, and there is a good deal of wheat in transitu now from Milwaukee to Richmond.

Q. By way of New York?

A. I think it comes part of the way by the Pennsylvania Railroad; probably a part of the way on the lake, and from that to this point upon rail, but the rates of transportation are so very great that we find it very difficult to compete with other mills having greater facility.

Q. What is the rate per bushel from Milwaukee?

A. I hope I may be pardoned for referring to my own operations. We are advised of purchases there at about \$1.11. We are told that the wheat will cost us here \$1.50½.

Q. About 40 cents, then?

A. Yes, sir; we are looking to Saint Louis. I am very desirous of getting some of that wheat. It is quoted to us at \$1.55 to \$1.58, with a freight of 57 cents per hundred pounds; that would be 34½ cents per bushel. From Toledo, Ohio, we have several lots of wheat, 10,000 bushels each. I think the freight from Toledo is 52 cents, while to Baltimore it is only 35 cents, making a difference against us of 10½ cents per bushel. I have been looking to Ohio and Kentucky, but the weather

in that region of country seemed to have been very injurious to the wheat at the time of harvest and thrashing, and I have seen no samples from that region of country that I would risk in flour.

By Mr. CONKLING :

Q. Cannot you bring wheat from Baltimore here for less than ten cents a bushel?

A. Yes, sir.

Q. How can there be a difference of $10\frac{1}{2}$ cents between you and Baltimore?

A. I speak of the railroad transportation; but then I have to pay $5\frac{1}{2}$ cents freight, one-half a cent wharfage; that is six cents. I have to insure it, and full insurance would be at least one cent now, because we have to insure at a pretty high average; that would be seven cents. I would have to pay a commission merchant there for attending to the receipt and shipment; that would be two cents, making nine; and then the transfer from the elevator I think is three-fourths of a cent, so that there would be very little difference. Then there is no one who stands between me and the person with whom I deal in Toledo.

Q. How much more does your flour bring, if any, than Baltimore flour?

A. We cannot claim more than one millrei and a half, but the purchasers do not admit that.

Q. How much is that reduced to our currency?

A. A millrei is about fifty cents.

By Mr. DAVIS :

Q. Is a large portion of your production shipped to South America?

A. Until within the last three months almost exclusively everything, except the lowest grade of flour, say ten per cent. of the grinding. At our particular mill we have turned our attention more in the last three or four months to grinding for home consumption, simply because we prefer two strings to our bow.

Q. Do the vessels that take it to the different foreign ports come to your town?

A. When we sell flour to the New York shippers they charter vessels to come around. The Baltimore exporters generally ship in their own vessels, and are very much averse to sending them to Richmond. Previous to 1861 there were a good many vessels owned here at Richmond. I was interested in some six or eight myself. My brothers and myself had five, and we imported coffee, and the business was increasing very rapidly. We brought in a good deal of sugar, and we only wait now for a line west with means of getting the coffee, dealing with the other cities in the West and sending the coffee through at a low rate and without detention, to resume that business.

Mr. CONKLING. What is the aversion of Baltimore to send her steamers here?

A. They say that it is on account of the river; but it is very natural that every citizen should want to build up his own town, and they throw all of their influence in favor of the Baltimore mills as much as they can, while the factor—the commission-merchant in Brazil—has a very great influence at work upon him to do all that he can for the Baltimore mills, because vessels bringing them Baltimore flour generally have orders for a return cargo of coffee. There has been very little coffee imported into Richmond for the last five or six years.

By Mr. NORWOOD :

Q. Did you import much here before the war?

A. Yes, sir. I think we had gotten up here to about 60,000 or 70,000 bags, and the business was increasing very rapidly.

By Mr. SHERMAN :

Q. What is the reason you do not count more upon the Chesapeake and Ohio Railway?

A. The Chesapeake and Ohio Railroad has not yet completed its connections, and there is too much uncertainty up to this time in sending freight through. We bought twenty-five car-loads of corn in Illinois—we purchased it from a party here who was in the city. The corn was to come from Illinois the 25th of July, and we only got the last two or three car-loads last week. One other purchase that we made, thirty car-loads of corn, fell short about twelve hundred bushels. That was owing to its transshipment at Cincinnati. We have not yet been able to get any satisfactory settlement.

Q. In other words, the route, I suppose, is not yet really opened to do business?

A. I suppose not.

Q. What facilities will you have with the Chesapeake and Ohio Road, as compared with the facilities from Baltimore to Cincinnati? Have you not the same in every respect?

A. I have been to see the vice-president of the road, and at one time he agreed that he would bring the freight at the same, but when he came to find out what the rate was, he said he could not do it from Toledo, Ohio.

Q. But from Cincinnati, Ohio, to Richmond, have not you full as good a route in every respect as from Cincinnati to Baltimore?

A. I should think so, sir, except that there has to be a transfer of boat.

By Mr. DAVIS :

Q. What size vessels come here, how much water is there, and what tonnage do they take away from your wharves?

A. There were vessels owned here at Richmond that carried away about 4,500 to 4,800 barrels of flour, but they carried down probably from 1,000 to 1,200 barrels some distance below the bar on lighters. The largest vessel that my brothers and myself owned carried 3,800 barrels of flour. She brought in 550 bags of coffee. With the improvements they are making in the James River now, and the depth of water which it is presumed will be obtained, those vessels would come and go without any detention at all.

Q. How many feet would they draw?

A. I suppose the largest of them would draw loaded probably thirteen feet—perhaps thirteen and a half.

Q. What depth do you anticipate upon the finishing of your contemplated improvements?

A. I heard the president of the chamber of commerce say to-day that they would have eighteen feet.

Q. How soon?

A. He said within a year, if my memory serves me.

By Mr. NORWOOD :

Q. About what average depth of water have you now?

A. Twelve and a half feet, I think, sir, high tide.

Q. How high does the tide rise here?

A. Somewhere about four feet, I think. I am not positive, however.

Q. You have only about eight and a half feet, then, at low water?

A. Yes, sir, probably, across the bar.

By Mr. DAVIS :

Q. How far is the bar below ?

A. It is about five miles.

Q. Are you now dredging that ?

A. Yes, sir.

Q. Do you have tides here regularly, high and low water each day ?

A. Yes, sir ; twice a day.

JAMES M. HARRIS :

By the CHAIRMAN :

Q. State what your relation has been to this proposed James River and Kanawha Canal, or tunnel.

A. I was an assistant of Mr. Lorraine in making the survey under the orders of Colonel Craighill in 1871.

By Mr. DAVIS :

Q. Which part of it had you charge of specially ?

A. I had charge from Greenbrier bridge to Paint Creek.

Q. Down New River ?

A. Yes, sir ; Green Brier and New River and Kanawha.

By Mr. SHERMAN :

Q. You understand the points that we are aiming to obtain information upon. Proceed in your own way to give us any knowledge you have.

The CHAIRMAN. Before you proceed let me ask if Mr. Lorraine was the engineer of the company at this time ; was he employed by the Government or by the canal company ?

Col. CHARLES S. CARRINGTON. If the chairman will allow me, Mr. Lorraine was the chief engineer of the James River and Kanawha Company, and had been for fifteen or twenty years. He is now dead. He died after making the detailed location and survey of the western part of this line under the last appropriation by Congress. He died while making his report. I may be pardoned for saying, sir, that a man more eminent in his profession as a hydraulic engineer, not only because of culture, but because of experience and of high character, does not exist. I am sure that his standing in the profession was as eminent, to the extent that it was known, as any man in the United States. Under the first appropriation by Congress Colonel Craighill, under the order of the War Department, on account of the eminence of Mr. Lorraine, selected him to make the survey of the tunnel line ; to make that survey which decided the question of the practicability of the route. Mr. Lorraine declined to do so. He said that he had reported in connection with other engineers upon that very question, and that, having so reported, and this being a survey of the United States Government, he thought it ought to be made by the officers of the United States Government. Afterwards, when it came to the detailed location of the line, which was a mere practical matter, the engineers of the United States having reported the line entirely practicable, Mr. Lorraine then consented to make the detailed location of the line. His connection with the survey was that. He was at the same time the chief engineer of the James River and Kanawha Company, and he did make the detailed location, a mere matter of detail ; he consented to that. Mr. Harris was his assistant.

Mr. HARRIS, (resuming.) One of the inquiries submitted was this :

The supply of water for the summit level, and facts in relation to the most formidable engineering difficulties to be overcome. The question of carrying a continuous canal across the Alleghany Mountains by uniting the head-waters of the James and Kanawha Rivers has been agitated ever since this region was surveyed by Capt. William G. McNeil and his corps of topographical engineers in 1827, under orders of the War Department. All of the engineers concur in the opinion that there will be an abundant supply of water for a canal on this route. The last survey was made by William R. Hutton, under the direction of Col. William P. Craighill, of the United States Corps of Engineers. He reports, after supplying all deficiencies which may exist in the natural stream in the driest season to supply an enlarged canal that there would remain in the Anthony Creek reservoir a surplus of 3,512,496,220 cubic feet of water. See page 19, 56, and 57 of Colonel Craighill's report to the War Department in 1871 on this subject. It will be seen at page 56 and 57 that Mr. Lorraine demonstrates clearly that the Anthony Creek reservoir would supply the summit-level, and leave a surplus for contingencies of 213,165 cubic yards per day. Since the foregoing estimate was made, the summit-level has been lowered 221 feet, so as to take in Greenbrier River, a stream 100 yards wide, as a feeder, and will have Anthony's Creek reservoir in addition to draw from if required. I think, then, there cannot be the least reason to doubt that there will be any deficiency in water to supply the largest canal the Government may deem proper to construct.

I will read a letter from a report of Mr. Edward Lorraine on this same subject of the Anthony Creek reservoir :

As doubts have been suggested as to the adaptation of this valley for the purpose of a reservoir, and vague surmises expressed as to fissures and caverns in the sides of the mountain through which the water would leak out, an eminent practical geologist was employed to make an examination of the geological structure of the site of this reservoir, who reported that if the engineers had the choice of the rocks of this region, it would be difficult to show how they could make a better disposition of them. He also expressed the opinion that the building a dam across the gorge of the mountain would produce the condition that once existed, as there was abundant evidence to prove that the valley had been once occupied by a lake, which had subsequently, by the disruption of the mountain, escaped through the gorge.

Now I am ready to answer any questions that the committee may propound.

By Mr. NORWOOD :

Q. What is the depth of that Greenbrier Creek, that is stated to be a hundred yards wide, that would be added to the supply of water by lowering this tunnel 216 feet ?

A. It is very shallow in the driest season. But it is navigable to bateaux for a large portion of the year.

Q. It struck me as being a considerable body of water if it was a hundred yards wide.

A. Three hundred feet is about the average width.

By the CHAIRMAN :

Q. In low water ?

A. Yes, sir ; that is about the bed of the stream.

Q. Have you any knowledge of the tunnel itself ?

A. No, sir ; I never made any survey of that part of the line.

By Mr. DAVIS :

Q. Did you ever estimate as to the cost ?

A. Yes, sir ; I have been over the calculation that Mr. Lorraine and Mr. Hutton made.

By the CHAIRMAN:

Q. You believe the descent down the other side entirely practicable, do you?

A. I do.

By Mr. DAVIS:

Q. What was your conclusion as to the estimates of cost which you say you have been over?

A. I think the estimate is very full. The work can be done for the estimate. It is from fifty to seventy-five per cent. higher than I have had the same sort of work estimated and done.

Q. Done?

A. Yes, sir.

Q. Do I understand you right when I say that?

A. The estimate is from fifty to seventy-five per cent. higher than similar work that I have had done.

By the CHAIRMAN:

Q. In that locality?

A. I never have had it done in that locality, but I think it can be done much cheaper there than where I had it done if the price of labor be the same.

Q. Have you ever had any experience in the construction of tunnels?

A. No, sir; my experience has principally been confined to building dams.

Q. Is there any difficulty whatever in damming the descending streams on the western side?

A. I do not think there is any difficulty, sir. It would be expensive.

By Mr. DAVIS:

Q. Did you make the estimates of it?

A. Yes, sir; I did.

Q. Did you make them what you believed to be ample?

A. I did, sir.

Q. Did you add anything to your estimate of them for contingencies?

A. I think ten per cent.

Q. You made the estimate when you made it from the canal to the Kanawha River, to where the open work would be on the canal?

A. I made the estimate from the mouth of Howard's Creek to Paint Creek, or rather, to the falls of Kanawha. Mr. Lorraine made a separate report of the Kanawha River, from the falls to the mouth.

Q. It was that part of the open navigation that would have to have dams that you located?

A. Yes, sir.

Q. What size vessel did you estimate for, what sizes were your locks?

A. The locks on the open river and steamboat navigation were 240 feet long by 40 feet wide.

Q. How deep?

A. Seven feet deep on the sills.

By the CHAIRMAN:

Q. What capacity of vessel will that accommodate?

A. I think my estimate was put at 800 tons; but I think I made out the capacity of the canal at 700 tons for that part of the line.

Q. For vessels of 700 tons?

A. Yes, sir.

Q. You understand that if the improvements were made on the Ka-

kanawha, and Greenbrier, and the New River, by such locks and dams as you have spoken of, a vessel of 700 tons can come from the Ohio through the tunnel?

A. Yes, sir.

Q. The slack-water navigation begins, as I understand it, immediately west of the tunnel?

A. About two miles. It commences at Greenbrier bridge, on the Greenbrier River.

By Mr. DAVIS:

Q. Did you estimate for the water in the open canal, that you would have abundance?

A. Yes, sir, I went over the calculations.

Q. You gauged it and found it would be ample?

A. No, sir, I did not gauge the river myself; but I took the data that had been established heretofore by Mr. Gill, and took the quantity that would be retained in these reservoirs by parties who had located them, Mr. Ellet and others.

By Mr. SHERMAN:

Q. Do you propose to dam the Greenbrier right at where the canal crosses it or above?

A. For a feeder there would be a dam a few miles above this point, and carried in by a feeder to the summit-level.

Q. Then you lock down into this river?

A. Yes, sir.

By the CHAIRMAN:

Q. The understanding is that the whole volume of the Greenbrier may be turned into this summit-level?

A. Yes, sir.

By Mr. DAVIS:

Q. The New River comes from the south?

A. Yes, sir.

Q. Does that freeze up as quickly as the ones coming from the north? Do you know anything about the length of time the New River is likely to keep open longer than the Kanawha and Ohio?

A. The Kanawha is a part of the New River. The New River and Greenbrier River form the Kanawha. The source of the New River is in the south. Its head is in North Carolina.

Q. Is its water the same temperature of the Gauley?

A. That is a colder stream, I think, sir; that runs rather north.

Col. CHARLES S. CARRINGTON:

By Mr. SHERMAN:

Question. What disposition is proposed to be made of the private rights of stockholders of the canal company in case the Government of the United States should conclude to assist in building the canal now owned by private citizens?

Answer. The capital stock of the James River and Kanawha Company is \$12,400,000, of which \$10,400,000 belongs to the State of Virginia, and \$2,000,000 to private stockholders. Seven million four hundred thousand dollars of this State stock is preferred stock. The statement of Mr. Bocock of the debt relations of the State and company is correct as to these relations prior to 1860 or 1861. Then the State released the mortgages executed by the company for its benefit, and invested its whole debt in the stock of the company. The bill for the completion of the canal, reported back by the Committee on Commerce

for the consideration of the House of Representatives during its last session——

By Mr. CONKLING:

Q. Do you mean the house of representatives of Virginia?

A. No, sir; the House of Representatives of the United States. This bill is found in Report No. 76 of the reports of the Committee on Commerce of the House of Representatives, Forty-second Congress, third session, and as to this private stock directs as follows:

And provided further: That the Secretary of War shall purchase, or contract to purchase all private stock in said James River and Kanawha Company at a price not exceeding twenty-five dollars per share of said stock of one hundred dollars par value; or in the event that any owner or owners of said private stock in said company shall refuse to sell the same at twenty-five dollars per share, then provided the State of Virginia shall condemn for the United States Government such stock, or authorize the Secretary of War, or his authorized agent, to condemn the same for the benefit of the United States; the owner of said stock in either case to be paid the fair market value for the same, as ascertained by such condemnation, to the end that all the titles, franchises, interests, and property, of whatever character, of the said States of Virginia and West Virginia, upon the conditions hereinbefore mentioned, and of the private stockholders of the James River and Kanawha Company, shall be vested in and become the property of the United States.

The memorials of States and commercial bodies to the Congress of the United States, in connection with this line, indicate the wish that all private and corporate proprietorship in it should be extinguished by the General Government, and that in its construction and control there should be all possible guarantees for providing and preserving for the people of the whole country the best and cheapest transportation practicable. The memorial of the National Board of Trade urged the completion of this line at the earliest possible period, and also that the extinguishment of all private interest should be a condition precedent to the grant of aid by the General Government. This memorial also recommended that the cost of construction, as represented by the outlay of the State of Virginia, should be fully re-imbursed to that State. This is the outlay, besides other property and interests, which is tendered by the States of Virginia and West Virginia in their memorial to Congress for the acceptance of the General Government, upon the condition of completing and controlling the line in the interest of the people of the whole country. The memorial of the National Board of Trade also first suggested the plan of constructing, and perhaps managing, the line through a board of commissioners appointed by the General Government and by the States named in the memorial. The blank in the bill as to the price to be paid for the private stock was filled with \$25 per share of \$100, par value, after consultation with certain leading citizens of the valley of the Mississippi, who, in the interest of the country, have given some attention to the subject of transportation between that valley and the sea-board. In 1870 or 1871 there was sent to each of these gentlemen, for their revision, a manuscript copy of the first bill presented to Congress for the completion of this line, and to a portion or all of them a statement showing the facts from which the conclusion was drawn that \$25 per share should be paid for the private stock, and their opinion asked as to its correctness. These facts in substance were the following: That probably more than one-third of the private stock was now owned by original subscribers at a cost per share of \$100 principal money. The city of Richmond owns \$500,000 of such stock, the city of Lynchburgh \$67,300, and Washington and Lee University \$10,000 the gift originally of General Washington to Washington College. It further appears that probably one-third of this stock was held by private citizens at a cost of from \$15 to \$20 per share, bought in 1860 or '61,

when it was believed that the line would be completed under a then agreement between the State of Virginia and private stockholders with a French company, and that the remainder, less than one-third, had probably changed hands since the war at from three to six dollars per share. It was also known that while a constant struggle had to be maintained with some parties to preserve the line in its entire length in the possession of the States of Virginia and West Virginia to prevent its being dissevered and a part with the States and a part with private parties, until the General Government should decide whether it would accept or reject the application of these States for its completion, and with other parties who sought the possession of the line probably only for speculation, still there were other parties who legitimately desired that these States should make to them the same concessions as to the General Government, and who designed in good faith to do all which they might agree to do in connection with the completion of the line. It was also believed that such last-mentioned parties, in the event of agreement with these States, would prefer to extinguish this private stock, at least by payment in the stock of the new organization, share for share. The contingent value of the stock was regarded as entitled to an equitable consideration, and was brought to the attention of some of the gentlemen referred to during the last session of Congress, when I think this blank in the bill was first actually filled with \$25 per share as the price to be paid for the stock. It is not improbable that a large portion of this stock would be surrendered for a much smaller sum. The incidental advantages to the cities of Richmond and Lynchburgh, and to the States of Virginia and West Virginia, on the completion of the line, would be so great, that I doubt not these cities and many citizens would, if necessary to secure it, surrender their stock without charge. The only question considered was, what was the just, equitable price which the Government should pay for this private stock, and the conclusion that \$500,000 should be paid for the \$2,000,000 was reached after consideration of the facts and after conference with only one of these stockholders, perhaps two, both of whom would surrender their stock if necessary without charge, and with eminent citizens looking at the whole subject only in the light of the public interest. As to the market value of the \$10,400,000 par value of the stock of the State I have no knowledge. A leading member of the senate of Virginia stated in his place, last winter or the winter before, that he was informed that there were parties who would pay the State \$2,000,000 for this interest. Neither the parties nor their purpose in purchasing were mentioned.

By Mr. SHERMAN:

Q. Is there any debt on the canal?

A. The debt is \$1,250,000, secured by two mortgages; the first mortgage for \$750,000 and the second for \$500,000. The 3d section of the bill mentioned provides for the payment of "the debts of the James River and Kanawha Company, and of that portion of the aforesaid water-way which lies in the State of West Virginia, and which is under the control of said State, to an amount not exceeding _____ dollars, or make proper provision for the payment of said debts."

It was proposed to fill this blank with the sum of \$1,500,000, to include a contingent liability of the James River and Kanawha Company for an alleged debt of \$100,000 or more, which is the subject of litigation now pending in the court of appeals of Virginia. Also for the contingency of possible indebtedness of that portion of this line

in West Virginia. The sum to be paid is limited to prevent the possible assertion and payment of unjust claims.

By Mr. CONKLING:

Q. How old are these mortgages?

A. They were both executed since the war.

Q. Has the interest been paid?

A. It has on all of the bonds which have been issued under the mortgages. With reference to the bill for the completion of this line pending during the last session of Congress, I ask permission to say that much thought and labor have been bestowed upon it, that the great interest which it seeks to promote may be best secured to the country. Manuscript copies of the first bill were sent, as just mentioned, for the revision of gentlemen eminent for character and ability, and, at the then succeeding session of Congress, this bill was presented to the House of Representatives and ordered to be printed. Its provisions were again subjected to a critical examination; but in view of their importance and of the ability and experience of General Humphreys, Chief of Engineers, the Hon. Mr. Kerr, of Indiana, and the Hon. Mr. Stevenson, of Ohio, united in a letter to this distinguished officer, asking his revision of this bill with such amendments as he thought proper to promote the public interest. This letter was referred to Col. W. P. Craighill, who returned a paper suggesting important and salutary changes in the bill. This paper, with a letter from General Humphreys, showing the circumstances under which it had been prepared, was communicated directly by that officer to the House of Representatives and ordered to be printed and referred to the Committee on Commerce. During the last session of Congress, with the aid of these previous papers, the bill was framed which was reported by the Committee on Commerce for the consideration of the House of Representatives, and which was pending when the Forty-second Congress expired. I think that this bill is, perhaps, defective in conferring too large a share of power in the management of the completed line with the commissioners of States named, and too small a share to the General Government. My leading purpose in referring to this bill is at least to indicate the earnest wish of all who have had any connection with its preparation, that it shall be made as perfect as possible in promoting the public interest.

By Mr. SHERMAN:

Q. I see that you are speaking about the details of the bill, but I want to get the amount of individual interest which will have to be dealt with.

A. The individual interest will be \$2,000,000 par value of private stock, and \$1,500,000 of debt of the character and condition described.

By Mr. DAVIS:

Q. On that subject it occurs to me that I have seen that some portion of this \$500,000 has been liquidated.

A. The debt is as I have stated. All of the Richmond mortgage bonds have not been issued.

Q. It is not, then, a debt against the canal?

A. It amounts to this, because, though not yet issued, the debt of the canal of every description, as far as I am informed, will, in the aggregate, be \$1,250,000, the amount of these mortgages. I mean the debt other than that which I have described as contingent and as possible in West Virginia, and which actual debt and contingency and possibility are all included in the \$1,500,000.

Q. Has this \$1,250,000 debt been made since the war?

A. No, sir. All of it, except that necessary to repair the canal after the unprecedented flood of September, 1870, was created before and during the war.

By Mr. CONKLING:

Q. Then the bill provides that the \$500,000 shall be paid, and debt not exceeding \$1,500,000?

A. Yes.

By Mr. NORWOOD:

Q. Then not to exceed \$2,000,000 altogether?

A. Yes.

Q. Who executed the mortgages on that property?

A. They were duly executed by the James River and Kanawha Company.

Q. By the private stockholders also?

A. Yes.

Q. Have you a board of trustees?

A. The management of the company is with a president and directors. The president is elected annually by the stockholders. These are the State represented by its proxies and the private stockholders. The president and five directors constitute the board of directors. One of these directors is annually elected by the private stockholders, one by the State and private stockholders, and three are appointed by the board of public works of the State, which board also appoints the proxies of the State.

Q. It was a mortgage, then, given to secure a debt already incurred?

A. Yes, to the extent before explained. In the repairs of the canal after the great flood of 1870, the city of Richmond aided the company by exchanging \$200,000 of its bonds for a like number of the second-mortgage bonds of the company. The company received the city bonds and expended the proceeds in the repairs of the canal. The bonds of the company in exchange have not been issued to the city, but are held under agreement to be issued and delivered on the order of the city. This agreement also provided for forbearance for a short term of years in the payment of interest on these bonds. These bonds, with this unpaid interest, are included in the debt stated as \$1,250,000, and all of the debt of the company, except that included in the repairs of the canal after the flood of 1870, was incurred either before or during the war. The mortgages were executed since the war, but the bonds issued under them were used to pay the ante bellum debt, and received at par in such payment. These bonds are six per cent. currency bonds.

By Mr. DAVIS:

Q. Is the canal now paying its own expenses?

A. Yes, sir. Its revenues are sufficient for this, not including yet the interest on the bonds to be issued to the city of Richmond, as before explained, but will grow to this and beyond as soon as there is any revival of the production of the fertile tonnage basin which it traverses.

Q. What are your rates of toll?

A. These are much higher than they would be if the tonnage of the canal was greater. The tonnage basin of the canal is restricted by railroads. These are on both sides of it, a greater or less distance for its whole complete length. The completed canal extends from Richmond to Buchanan for 197½ miles along the valley of the James River. This valley and country adjacent, on both sides of the river, were very fruitful in tonnage before the war. It would be as productive now if

as well cultivated. In addition to its staple crops of wheat, corn, hay, and tobacco, the deposits of iron-ore, which were worked on the borders of the canal some 50 or 60 miles east of the Blue Ridge, and the product of its quarries of slate, limestone, and hydraulic cement, and of other minerals, increased the tonnage of the canal. These, with manufactures, to which the line is so well adapted, are now elements of increased tonnage on the line of the existing canal, the growth of which, in the hands of enterprise, capital, and labor, can only be conjectured. The canal, in its progress to the Ohio River, reached only a short distance beyond the eastern border of the great iron-region of Virginia. Covington, near the foot of the Alleghany Mountains, and 47 miles beyond Buchanan, the present terminus of the completed canal, may be regarded as near the western border of this Virginia iron-region on the line of the projected canal. The falls of the Great Kanawha River, distant $94\frac{2}{10}$ miles from the mouth of that river at Point Pleasant on the Ohio, may be taken as near the central point on the same line of the Great Kanawha coal-fields. The bill for the completion of the canal provides that the water-way as proposed shall be completed from Buchanan to Covington, and from the mouth of the Kanawha River to the Kanawha Falls, within four years from the time that the act takes effect. The estimated time for the completion of this work is two years, and the estimated cost \$6,015,749.11. This estimate includes the cost of the Meadow River reservoir, the value of which is so fully explained in the reports before the committee. An expenditure of less than \$500,000 in the improvement of the existing canal, from tide-water at Richmond to Buchanan, will give it a capacity of more than 3,000,000 of tons annually, at an aggregate cost of transportation to the canal very little greater than the cost of its present tonnage. An expenditure of less than \$7,000,000 in two years' time, say three years, will thus provide a water-way for use and revenue, and be in part completion of this central water-line for $244\frac{1}{2}$ miles east of the Alleghany Mountains, of which $198\frac{1}{2}$ miles will be canal and 46 slack-water navigation, with a capacity for transportation of 3,000,000 of tons annually, and west of the Alleghany for $94\frac{1}{2}$ miles in part completion of the same line, of which 79 miles will be improved open river-navigation and $15\frac{1}{2}$ miles slack-water. There will then remain of this central water-line for completion 132 miles and a fraction of a mile, and enlargement of the canal from tide-water at Richmond to Buchanan in the mode reported by Colonel Craigbill, the United States officer in charge of the surveys.

The eastern and western portions of this line, from Covington to the falls of the Kanawha, will be connected by the Chesapeake and Ohio Railroad, a distance by rail of 105 miles, with a grade not exceeding thirty feet to the mile. Barges with western freights might then reach the falls of the Kanawha, and there, transferring their freights to the railroad, would find abundant return-freight in the coal, salt, and lumber of that region.

The railroad might, if it would, transfer the heavy barge-freights to the canal at Covington, and find cheaper transportation for such freights to tide-water over a canal even of present dimensions, and it would also find through this canal the cheapest outlet for the coal of the Kanawha consigned to eastern markets. These coals would also furnish fuel without coking for the furnaces which would be established in that iron-region bordering the canal for 70 or 80 miles east of Covington. This region also abounds in the limestone necessary in the manufacture of iron. This mode of constructing the central water-line will give a quick though partial relief to the valley of the Mississippi, will develop great wealth, and much needed by the varied interests of

the country, and will very soon not only make full payment to the General Government of interest on its outlay in construction, but aid in the construction of the intervening 132 miles of water-way. It would promote the prosperity of the Chesapeake and Ohio Railroad, not only in giving increased tonnage to its one hundred and five miles of intervening railroad, with its low grades to Covington, perhaps to Clifton Forge fifteen miles east of Covington, and higher grades beyond, but by aiding in developing a virgin region, perhaps without parallel on the continent in the abundance, variety, and value of its mineral wealth, in giving that population to this region which is not only exclusively railroad-freight, but the best, and in increasing its higher-class freights from the East, in the return over its line of the product of the less profitable heavy tonnage transported to the East by the canal.

Clifton Forge on Jackson's River, a short distance above the junction of that river with the Cow Pasture River, forming James River, is the first point at which the Chesapeake and Ohio Railroad, after leaving tide-water at Richmond, touches the projected central water-line. This point by the water-line is fifteen miles east of Covington and thirty-two miles west of Buchanan. When this water-way shall reach Clifton Forge, the results just mentioned, as to the portion of this line east of the Alleghany, will begin to be realized.

Q. Do you recollect what your present rates of toll are from Buchanan to Richmond?

A. I do not; but there is a statement with the committee which shows this. As just stated, we could transport 3,000,000 of tons at a very small additional expense to the canal—the employment of more clerks would probably be all.

By the CHAIRMAN:

Q. I understand this proposition is made on condition that a free canal is made. Suppose that the bill should contain a provision wherein the payment of tolls sufficient to meet the interest on the outlay was required, would there be any objection then on the part of the State of Virginia?

A. No, sir. The memorials of the States of Virginia and West Virginia say as to this:

It is respectfully asked that the Congress of the United States shall, in such way as may seem to them best, either by direct appropriation or by a loan of the credit of the Government, furnish the means of executing the work in four years. On her part, the State of Virginia will relinquish all her interest in the work, which is represented by more than \$10,000,000, of which \$7,400,000 is preferred stock, money actually expended in prosecuting the work to Buchanan, and will turn the work over to the Government to be completed in such manner as Congress may direct. If Congress shall see fit to complete the work by direct appropriation without a return of the principal and interest, Virginia will further agree that the water-line, as soon as completed, shall be thrown open to the public, free of toll, except so far as may be necessary to keep the work in repair. This suggestion is made with the broad view that it is a work in which the whole nation will be the stockholders, and that the money paid for its construction will be more than returned, every year, principal and interest, in the saving in the cost of transportation, the cheapening of provisions, and the general development and prosperity of the country. But if this view should not prevail, it is not doubted that the money advanced by the Government could be speedily returned, both principal and interest, from the revenues derived from tolls, and when that shall have been done, then the State will consent that the water-line shall forever be a public highway free of toll, except for purposes of repair. The State of Virginia will agree that the work shall be prosecuted either under the management of the company, subject to such regulations and restrictions as Congress may impose, or by commissioners appointed by the States of Virginia and West Virginia, who will hold the property as a sacred trust for the benefit of the whole country under like regulations; or that the prosecution of the work and the management of the property, when it shall have been completed, shall be committed to a board of eleven trustees, one of whom shall be appointed by the President of the United States, and one each by the States of Iowa, Mis-

souri, Arkansas, Illinois, Indiana, Kentucky, Ohio, Virginia, West Virginia, and Maryland, as recommended by the National Board of Trade at its annual session in December last, or in any other way in which its construction and management will best promote the prosperity and welfare of the whole country.

Q. I did not know but that the condition was it should be a free canal at once?

A. No, sir. After suggestions as to its construction and management, these States submit to Congress the decision as to the construction and management which will best promote the prosperity and welfare of the whole country. The bill, however, brings the whole subject again before the States of Virginia and West Virginia, by requiring legislation by these States before anything is done by the General Government toward the completion of the water-line.

By Mr. DAVIS:

Q. I understand that you are not particularly wedded to the bill presented, but you prefer the bill which is best.

A. I am not in the least wedded to this bill. I referred to it that the earnest efforts to prepare it with an eye single to the interest of the whole country might appear, and to enlist further efforts in the same direction. That bill will be most acceptable to the people of Virginia and West Virginia which provides and preserves for the whole country the freest and cheapest transportation, and which, in its construction and management, will secure the greatest fidelity to that trust which these States in their memorial describe "as a sacred trust for the benefit of the whole country."

It is possible that a statement of some of the results of an examination of the recent reports of survey of this line, made under the orders of the General Government as to its length and character, may aid the committee in their investigation. Three appropriations have been made by Congress since 1870 for the survey of this line: two of these for the whole line, and one for the Kanawha River. The object of the first survey was chiefly to throw additional light upon the question, first, of the practicability of the line, and, secondly, if practicable, then of its cost. This survey was committed to Col. W. P. Craighill, an able and experienced officer of the United States Corps of Engineers, and his report of the survey was transmitted to Congress in 1871. (Ex. Doc. No. 110, Forty-first Congress, third session.) I may mention, incidentally, that, like all previous reports upon this subject, beginning with that of Captain McNeil, United States Corps of Engineers, in 1826 or 1828, this report regards the question of the practicability of the line as definitely settled. In this connection I ask permission to say that the conduct of this survey was offered to Edward Lorraine, the chief engineer of the James River and Kanawha Company, because of his eminent qualifications for the work.

Mr. Lorraine died in December of last year. The high personal character and sound judgment of this gentleman, his professional talents, culture, and experience as a hydraulic engineer, were well known to us in Virginia, and, had he lived, with opportunity of being known professionally to the country, he would have been recognized as one of its most eminent hydraulic engineers. Mr. Lorraine declined the appointment, which he valued as one of honor and privilege, because this survey involved the inquiry of the practicability of the line, and this inquiry had been the subject of his examination and favorable report.

The question of practicability having been considered, Mr. Lorraine consented to make the survey of the Great Kanawha River, a part of the line from the falls to the Ohio, and the detailed survey and location of the line west of the Alleghany Mountains to the falls of the Kanawha.

The report of Colonel Craighill on the Kanawha River was transmitted to the third session of the Forty-second Congress.

Mr. Lorraine also completed the detailed survey and location of the line west of the Alleghany to the falls of Kanawha, and was employed in writing the report of this survey at the time of his last illness. This report was completed by his assistant, Mr. James M. Harris. The report of Colonel Craighill of this detailed survey and location will, no doubt, be duly transmitted to Congress at its next session. These reports constitute a full and complete survey, examination and location of this line in its whole length and in every part of it, from tide-water at Richmond to the Ohio River at the mouth of the Kanawha, and furnish detailed estimates of the cost of its completion.

These reports show that the actual length of the central water-line from tide-water at Richmond to the Ohio River at the mouth of the Kanawha River will be	471. 44 miles.
And that the actual character of its navigation will be by canal between Richmond and the Greenbrier River at the mouth of Howard's Creek	228 miles.
And by canal between the mouth of Howard's Creek and the foot of Paint Creek Shoals, on the Kanawha River	3
Number of miles of canal	231
Slack-water navigation between Richmond and the mouth of Howard's Creek	46
Slack-water between the mouth of Howard's Creek and the foot of Paint Creek Shoals	115. 39
Number of miles of slack-water	161. 39
Improved open river-navigation from the foot of Paint Creek Shoals to the Ohio River at the mouth of the Kanawha	79. 05
Number of miles of open river	79. 05
	<hr/> 471. 44

The navigation of this line will in fact be by canal, slack-water, and river, as just stated; but in estimating its commercial character the forty-six miles of slack-water navigation being at intervals between Richmond and the mouth of Howard's Creek, should probably be rated as canal-navigation.

In further considering its commercial character, the three miles of intervening canal, west of the Alleghany, (made to save more than ten miles in distance,) may be rated as slack-water, and the whole slack-water as navigation by river. This view of the commercial character of the line is certainly less favorable than its merits justify, as forty-six miles of slack-water navigation are estimated as canal, and only three miles of canal as slack-water, and the slack-water is estimated as river-navigation, when, with its lockage equated, it will be less expensive.

Indeed, in any estimate of the cost of transportation over this line, it would be right to regard this slack-water as lake navigation, less the cost of lake insurance.

The line thus considered as to its commercial character, if I may so describe it, will be composed of two hundred and seventy-four miles of canal from tide-water at Richmond to Greenbrier River, at the mouth of

Howard's Creek, and 197.44 miles of river-navigation from the mouth of Howard's Creek to the Ohio River at the mouth of the Kanawha, together 471.44 miles, the actual length of the line.

But, as a line of commerce or transportation, this actual length is also changed and increased by its lockage, equated by the rule which may be right. This addition for lockage to the actual length of a water-way is ascertained, to the extent of my information, by adding ten minutes' time for passing each canal-lock, and fifteen minutes each ship-lock, or one half mile of distance for the one and three-quarters of a mile for the other; or, by adding one mile of distance for each lock, or by estimating 11.37 feet of lockage as equal to one mile.

The reports of survey show the lockage on the line:

	Miles.	Feet.	Locks.
From tide-water at Richmond to summit-level .	272	Elevation 1,700	160 (120 by 20 feet.)
From summit-level to mouth of Howard Creek	2	Descent 30	3 (" ")
	<u>274</u>	<u>1,730</u>	<u>163</u>

These 274 miles, as before explained, are assumed to be by canal navigation, and this lockage, (1,730 feet,) by whatever rule equated, should be added to the canal-navigation of the line.

From the mouth of Howard Creek to the foot of

Paint Creek Shoals . . . 118.39 Descent 1,096 76 (240 by 40 feet.)

These 118.39 miles are assumed, as before explained, to be by river-navigation, and this lockage, (1,096 feet,) by whatever rule equated, should be added in distance to the river-navigation of the line.

From the foot of Paint Creek Shoals to the Ohio River at the mouth of the Kanawha 79.05 miles, fall 62.02 feet, but fall not equated, because navigation will be by unobstructed river improved by open dams 79.05

471.44

2,826 239

There are eighteen guard-locks, but these are not equated because the lockage is embraced in the 2,826 feet.

If this lockage is equated, by adding ten minutes' time for passing each canal-lock and fifteen minutes for each ship-lock, or half mile for the first and three-quarters of a mile for the last-mentioned time, the

addition to the length of the line will be $138\frac{1}{2}$ miles, to be allotted to its component parts as a line of navigation by canal and river, as these additional miles belong.

	Canal.	River.	Total.
Actual length of central water-line from Richmond to the Ohio River	274 miles.	197.44 miles.	471.44 miles.
Add $\frac{1}{2}$ mile for each of the 163 locks (120 by 20 feet) on canal portion of line.....	81.50		81.50
Add $\frac{3}{4}$ of a mile for each of the 76 ship-locks (240 by 40) on the river portion of the line.....		57	57
	<hr/> 355.50	<hr/> 254.44	<hr/> 609.94

If one mile is added for each lock, then 239 miles should be added to the line; if one mile for each $11\frac{37}{100}$ feet of lockage, $248\frac{29}{100}$ miles.

From my examination of the rules upon this subject, I believe that the right rule for the equation of this lockage is that which allows ten minutes' time for a boat to be passed through a canal-lock and fifteen minutes through a ship-lock. This opinion is favorable to this line to the extent just shown, but satisfied as I am that in practice this rule will be found to be nearer to the truth than any other, I do not hesitate to say so. I will not detain the committee in connection with this subject except to say that on the James River and Kanawha Canal we find with its primitive machinery for emptying a lock, that seven and a half minutes is time enough to pass a boat through a single lock, and that from long observation we believe that ten minutes, including the time for stopping and getting the boat again under way, would be abundant, especially with improved machinery for working the locks. I observe that the newspapers report that Mr. Hatch, of Buffalo, expressed the opinion to the committee that ten minutes was a sufficient allowance of time. Mr. McAlpine adds one mile of distance for each of the 72 locks of the Erie Canal, but only twelve hours' time for passing them, or ten minutes to each lock. (See address at the Cooper Union, p. 32.) He also mentions the fact of the daily arrival at tide-water of 150 Erie Canal boats, which allows a fraction more than nine minutes for passing each lock. Indeed, on the Erie Canal 198 boats have been passed through a single lock in one day, and Mr. W. R. Hutton, chief engineer of the Chesapeake and Ohio Canal Company, at the date of his connection with Colonel Craighill, in 1870, in the first survey of this line before mentioned, and now the able consulting engineer of that company, says in substance in his report (page 18) that it may be safely assumed that 180 boats will be passed through a single lock on this line in one day, and supposing that the tonnage of the boats which will be used will be about 280 tons, and averaging the trade going east and west at only 180 tons to the boat, he shows a trade for this line of 9,720,000 tons per annum, or for a season of 300 days. The passing of 180 boats in twenty-four hours through a single lock gives eight minutes for passing each lock.* My purpose in equating the lockage on this line by the two other rules mentioned, was that the distance which would be added to this line by its lockage, under all of the rules of which I have any knowledge, might appear to the committee.

* I submit to the committee a paper on this subject prepared by Mr. Walter G. Turpin, a civil hydraulic engineer of ability and experience in his profession.

The addition of 138.5 miles for lockage increases the length of this line from 471.44 miles, its actual length, to 609 miles.

Distance from foot of ship-lock at Richmond to Newport News, say mouth of James River, (in connection with which the United States engineer in charge reports that a further expenditure of \$250,000 will secure 18 feet of water at high tide at the head of tide-water at Richmond) 104 miles.

From Newport News to the capes of Virginia, by Hampton Roads and the Chesapeake Bay 22

126

From the Ohio River at mouth of Kanawha to capes of Virginia 735.94

From the mouth of the Kanawha to the mouth of the Ohio 704

From the mouth of the Ohio to the capes of Virginia... 1,440

If the navigation of Hampton Roads and the Chesapeake Bay is assumed to be river-navigation, then the composition of these 1,440 miles as a line of transportation will be—

	Miles.
By the Ohio River	704.00
By the river portion of central line	254.44
By river from Richmond to capes of Virginia	126.00

By river	1,084.44
By canal	355.56

Total	1,440.00
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Mr. DAVIS. How far to New York?

A. Two hundred and ninety-three statute miles from the capes of Virginia to New York, and 1,733 miles from the mouth of the Ohio River (with the distance added for lockage as stated) to New York. I believe that it is twenty-four hours' time from Norfolk to New York. I will presently ask the attention of the committee to a statement of comparative distances. In this and in all like statements in connection with this line, I make New York City the ultimate eastern market in this country, as it is and must continue to be the financial and commercial heart of the country; and Liverpool in Europe.

Mr. NORWOOD. Do you mean Capes Charles and Henry when you speak of the capes of Virginia?

A. Yes, sir. In connection with the probable rates of transportation over this line of 1,440 miles, I venture the conjecture that on the canal portion, reduced to a level by equating its lockage as stated, the carriers' charges (without tolls) will be less than four mills per ton per mile. Mr. W. R. Hutton, in his report of the first survey, (page 19,) says that "the officers of the Erie Canal have found the cost of transportation on same to vary from 2.16 to 2.25 mills per ton per mile up to 1866, and in 1868 to have reached 4.06 mills. I make the cost on the present work reduced to a level, 2.03 mills." The average carriers' profits on all classes of freight on the New York canals is about one mill per ton per mile. I submit that it would be reasonable to assume that the carriers' charges on the canal portion of this line will not exceed three mills, be-

cause of the larger capacity of the canal, the four months' longer season of its navigation, the advantages of return cargoes of coal, iron, lumber, and salt, the salutary influence of competition in reducing rates, and because it is altogether probable that steam will be the motor on this canal.

On the river portion of the line, I also venture the conjecture that carriers' charges will be less than $2\frac{1}{2}$ mills per ton per mile, because even in the present condition of the navigation of the Ohio and Kanawha Rivers, heavy freights have been carried for about 1.8 mills per ton per mile. (Hutton's Report, p. 22.) Coal has been carried in large quantities from Pittsburgh to New Orleans at five-eighths mill per ton per mile, and the charges of transportation on the Mississippi River from Saint Louis to New Orleans I believe now approximate two mills, with a tendency to lower charges. In view of the immense amount of freights which will pour over this line, and the resulting better organization for its transportation, (Report, p.) I believe the opinion to be altogether reasonable that the rates of this river transportation will be less than two mills per ton per mile, exclusive of tolls on the 254.44 miles of river transportation included in the central water-line. Mr. McAlpine puts cost of river transportation at two mills. (Address, p. 32.)

A toll of sixty cents per ton on 7,000,000 of tons of through freight over this line of 471 miles (at the rate of 1.27 mills per ton per mile) will be \$4,200,000. Deduct from this \$700,000, one-sixth of these gross earnings, or \$1,486.19 per mile for expenses and repairs, and the remaining \$3,500,000 will pay five per cent., or \$55,000,000, and provide one per cent. for a sinking-fund and leave a balance of \$200,000. Two mills per ton per mile toll on this freight will yield \$6,594,000, and deducting \$1,099,000, one-sixth of this sum, or \$2,333.33 per mile for expenses and repairs, \$5,495,000 will remain for the quicker payment of the debt created for completing the line. Less than one-third of one mill per ton per mile on these 7,000,000 tons will yield \$942,000, or \$2,000 per mile for annual expenses and repairs. As to the 7,000,000 tons of through freight which is chiefly the basis of the statement just made, a glance for the present at the country tributary to this line, with the knowledge of its actual productions and its capacity for increased production, will, I think, relieve this estimate of tonnage of any just charge of extravagance. In view of the extent and character of this tributary country and of the tonnage-producing character of the section of Virginia and of West Virginia through which this line passes, it appears more probable that within a few years after its completion its tonnage will exceed rather than fall short of this estimate. But if this tonnage should be less, the line, in a financial view, should be considered, as it is in fact, one with the great system of river-navigation of the valley of the Mississippi, all free from tolls, except this 471 miles, composed of both river and canal navigation, and all affording such cheap transportation that tonnage can afford to pay, for these few miles, any rate of which in any probable, or I may almost say any possible, contingency will be necessary to provide any amount of money which will be required.

In the estimate of annual expenses and repairs I am guided by the fact that of the gross earnings of the Erie Canal from 1817 to 1863, it appears "that but a little more than one-sixth were required to meet expenses and repairs, while the balance, or about five-sixths, were net gain. And this included not only the period after the enlargement, but before, and when the canal was in an unfinished condition, and the cost of repairs much greater and the receipts less." (Memo. Com. Con., p. 36.)

I cannot now refer the committee to the authority for the statement, but my recollection is that the annual expenses and repairs of the Erie Canal, since its enlargement, have not exceeded \$600 the mile.

The annual average cost of expenses and repairs (other than the small expense for general administration) per mile per annum for eighteen years, from 1851 to 1868, of the James River and Kanawha Canal, was, for the Piedmont district, from Richmond to Lynchburgh, \$690, and for the mountain district, from Lynchburgh to Buchanan, \$807 the mile. This canal may be said to enter the mountain district of the State at Lynchburgh, and twenty-four miles beyond it arrives at the base of the Blue Ridge Mountain, and passes in a distance of four and a half miles through the back-bone of the Blue Ridge to Buchanan. I ask the attention of the committee in this connection to the letter of Edward Lorraine, chief engineer, &c., to R. W. Hughes, chairman of the sub-committee of the National Board of Trade. (P. 100, Ex. Doc. 110, Forty-first Congress, third session.) This letter is especially important in its exhibition of facts connected with that portion of the canal in the mountain district of Virginia. Mr. Lorraine, in the conclusion of his letter, says, "It is my opinion that the work on the Greenbrier and New Rivers, if properly executed, will be the most permanent, and will cost less per mile to repair, than any other part of the line except the Kanawha River."

The flood of 1870 was certainly the greatest for a century before, and probably the greatest since the settlement of the country, and although the canal in almost its entire length was exposed to its fury, yet the damage sustained was chiefly to its earth-works, and very little to its dams and locks.

Under the guidance of these views as to the charges of transportation I have prepared tables showing these charges over this line lengthened by the equation of its lockage under all of the rules which I have mentioned, also from points on the Mississippi, Missouri, and Ohio Rivers, to the capes of Virginia, to New York, and Liverpool; but I will not consume the time of the committee by reading these papers.

Assuming the commercial length of this line as that shown by equating its lockage by the rule adopted, as explained, it will be the shortest water-way, whether compared with any other in existence or projected, from the Mississippi River to New York City, and also the shortest from the Mississippi River through a sea-port of our own country to Liverpool. The only exception may be the Ohio Canal, from Cincinnati to Toledo. I am not informed as to its lockage, which, for the purpose of comparison, must be equated by the same rule as the central line. My information of the Chesapeake and Ohio Canal is obtained from the very full report of James M. Coale, esq., president of that company, to the stockholders, in 1851. As to the character of the locks on the line I was left to conjecture, and assumed that ninety-eight of these were ship-locks, as distinguished from canal-locks. I have prepared a statement showing the distance by these water-ways from and to the points indicated, which I will read to the committee. If inaccurate in any particular it can then be corrected.

TO NEW YORK CITY.

	Miles.
By Fox River and Wisconsin Canal	1, 749
By Illinois and Michigan Canal, (to this is to be added its lockage).....	1, 981
From New Orleans.....	1, 980

By the CHAIRMAN:

Q. By what route?

A. By the Gulf. From New Orleans to the Gulf, 130 miles, and 1,850 miles from the mouth of the Mississippi to New York.

	Miles.
By Chesapeake and Ohio Canal	2,007
By Portsmouth and Cleveland Canal.....	1,745
By Miami Canal, from Cincinnati to Toledo, and its lockage to be added	1,653
By Atlantic and Great Western Canal, and its lockage to be added	2,149
By central water-line.....	1,733

TO LIVERPOOL.

By Fox and Wisconsin	4,899
By Illinois and Michigan, (add lockage).....	5,131
From New Orleans.....	4,880
By Chesapeake and Ohio.....	4,984
By Portsmouth and Cleveland.....	4,895
By Miami, Cincinnati and Toledo, (add lockage).....	4,803
By Atlantic and Great Western, (to which add lockage on canal and distance from Savannah or Brunswick to Liverpool).....	2,149
By central line.....	4,710

I have attempted to ascertain the latitude of various points on the line from the mouth of the Ohio River to the capes of Virginia. I am not certain as to the accuracy of my efforts, which were made in a rough way, without instruments, but with great care, by those who assisted me.

	Latitude.
The mouth of the Ohio River.....	37.00
Louisville	38.15
Cincinnati	39.07
Mouth of Kanawha River.....	38.53
Charleston, West Virginia.....	38.23
White Sulphur Springs, (summit-level).....	37.46
Covington, eastern base of Alleghany Mountains.....	37.44
Lynchburgh.....	37.24
Richmond.....	37.36
Capes of Virginia.....	36.53

The mouth of the Ohio River and the capes of Virginia are within seven minutes, or eight miles, of being in the same degree of latitude. The capes of Virginia are within twenty-six miles of the central point of the eastern coast of the United States, and the mouth of the Ohio River within one hundred and thirty-eight miles of the central point of the valley of the Mississippi, on a north and south line from the mouth of the Mississippi River to the northern border of Minnesota. This central line is not only from the center of the valley of the Mississippi to the center of the Atlantic sea-board, but central to those inland seas bordering on the Atlantic coast of the United States, and so connected by artificial water-ways as to provide an inland navigation of great extent, without limit in capacity, and almost as safe in peace and war as a harbor with defenses. This internal navigation extends north from Hampton Roads by the Chesapeake Bay, and through the Chesapeake and Delaware Canal, to Delaware Bay, and to New York Bay through the Delaware and Raritan Canal, by the great cities of Baltimore and Philadelphia, to New York; and south from Hampton Roads through the Chesapeake and Albemarle Canal to Albemarle and Pamlico Sounds, and

with a few miles of ocean navigation, as explained to the committee by the president of the Chesapeake and Albemarle Canal, again by inland waters to Florida. The rivers which flow into these waters enable commerce to penetrate the interior of the country. The connection of Hampton Roads with Albemarle and Pamlico Sounds, and these with each other, gives in these sounds, and through the rivers flowing into them, an inland navigation of 1,800 miles, as explained this evening by Mr. Parks.

When we look west we see at a glance the great extent of country which will be benefited by the completion of this line. In point of distance it is nearer by this line to New York from a point on the Mississippi River, more than 600 miles below the mouth of the Ohio River. The Missouri River in its entire length, and the country west of it, with a large portion of the valley east to the Mississippi River, is tributary to it, because nearer to New York by the capes of Virginia than by any other water-line. The country bordering the Ohio River, north and south of it for almost its entire length, is in like condition as to distance. It is nearer to New York by this line from a point on the Ohio River, 130 miles above the mouth of the Kanawha River, than by the Chesapeake and Ohio Canal, when completed.

In connection with the extent of country bordering the Mississippi River above the mouth of the Ohio River, directly interested in the completion of this line, and of the direct and indirect interest of the entire valley of the Mississippi, I will read an extract from the memorials of the Louisville and Cincinnati Commercial Conventions to Congress, urging this completion. This memorial was prepared by Thomas M. Monroe, esq., of Dubuque, the chairman of the committee, a gentleman of ability and character, and distinguished for laborious investigation and accuracy of statement in connection with the subject of transportation between the valley of the Mississippi and sea board, to which he has given a great deal of attention.

It will be seen that *while water-lines are all open*, the shortest, cheapest, and best route from the Upper Mississippi, extending down the river to a point between Dubuque and Davenport, will be by the Wisconsin and Fox River route; from thence down the inclination is in favor of the central route or the Gulf route, with a margin of about 100 miles in width from north to south, extending across the States of Ohio, Indiana, Illinois, and Iowa, nearly 1,000 miles in length from east to west, of a highly productive and well cultivated country, in a condition to be competed for upon nearly equal terms as to the charges of transportation between the northern route on the one hand and the central route on the other, *the competition for which will compel the lowest paying rate of charges and increased facilities on each route*, in order to meet the competition of the other.

Even from the mouth of the Wisconsin River, the point most favorable for transportation over the Wisconsin and Fox Rivers and lake route, the difference in favor of that route over the central one does not exceed *five cents per hundred pounds*, and as the Mississippi River is always open from Saint Paul down, when the route by the lakes and Erie Canal can be used, any attempt to take advantage of the pressure to get through the lakes and Erie Canal, by raising the charges more than five cents on the hundred pounds, or three cents on a bushel of wheat, will always be checked by the available competition of the central route; so that one of the first effects of the construction of the central line will, by its competition, be to compel the facilities to be increased and the charges to be reduced on the northern route.

It was the apprehension of the competition of the route through Virginia that gave the North and West the benefit of the Erie Canal. A like well-founded apprehension will compel an anticipation of its rivalry by an enlargement of that work, and a reduction of charges to the lowest paying rates will follow; so that all that portion of the West and Northwest which will continue to use the northern line will be as much benefited by the central one as the region more directly tributary to it.

There is another advantage of the central route to the northern portion of the Mississippi Valley not to be overlooked. For at least ten weeks of each year, when the Wisconsin and Erie Canals will be practically closed to the West, the Mississippi River, as far north as either canal, is open, and connection with the central line free. Even

from Saint Paul there is open water for navigation down the river for a number of weeks when the northern canals will be closed.

So, too, when the northern route is closed, and no longer a competitor of the central one, any attempt on the part of the latter to extort higher rates, either of tolls or for transportation, will be checked by the competition of the Gulf route, it so happening that the climatic objection to the Gulf route has least weight during the period when the northern route is no longer available. So that the competition of each and every one of these improvements is necessary to enable the full benefit of the others to be realized, and thus fully to secure the primary and grand object, "cheap transportation."

Over the southern or Gulf route, the central route has the advantage in reaching a port convenient and of easy access to the ocean for the largest vessels, being always free from obstructions of every kind; it has also the advantage in distance, somewhat in time, and in avoiding heavy rates of insurance, port charges, and towage, and last and greatest, in passing through a climate more friendly to the transportation of northern products during the warm months, and especially of grain in bulk. Over both it has the advantage of constituting a part of a line extending across from east to west nearly two thousand miles, from Kansas City or Leavenworth to the Atlantic, as direct as from the head of navigation on the Mississippi to the Gulf, with available connections north and south with more than 10,000 miles of navigable water. It is wholly within the limits of our own country, and therefore free from interruptions in case of war. For the larger portion of the Mississippi Valley it will, *at all times*, be the shortest, quickest, cheapest, and best route of transportation. (Pages 32 and 33, Memo. Com. Convention.)

By Mr. CONKLING :

Q. From when to when would ice close this route ?

A. I cannot say from a day to a day.

Q. From a range of days to a range of days, then ?

A. It is the official duty of the superintendent of the James River and Kanawha Canal to report annually the time during the year of suspension of its navigation by ice. Edward Lorraine was the chief engineer of the canal, and also its superintendent at the time of his death, and had been for many years before. In answer to many inquiries from the West, Mr. Lorraine prepared a report of the leading facts relating to this canal. This report is found on page 51 of a pamphlet entitled "The Central Water-Line from the Ohio River to the Virginia Capes," and I believe is in the hands of the members of the committee. In this report Mr. Lorraine says:

By examining the reports of the James River and Kanawha Company it will be seen that from 1840 to 1848 there was no suspension of navigation by ice reported, except twelve days in 1845. If there were any others they must have been so slight as not to have attracted attention, or to have been deemed unworthy of comment. From 1848 to the present time, all suspensions of navigation by ice have been reported by the superintendents, and have been as follows:

Years.	Days of suspension.
1848-'49	8 days.
1849-'50	None.
1850-'51	None.
1851-'52	32 days.
1852-'53	None.
1853-'54	None.
1854-'55	23 days.
1855-'56	55 days.
1856-'57	56 days.
1857-'58	None.
1858-'59	None.
1859-'60	16 days.
1860-'61	None.
1861-'62	None.
1862-'63	None.
1863-'64	21 days.
1864-'65	None.
1865-'66	8 days.
1866-'67	42 days.
1867-'68	41 days.

We find, then, that in a period of twenty years the total number of days in which the navigation was suspended by ice amounts to 302, an average of 15 days for each year. As these reports apply to the canal as high up as Buchanan, west of the Blue Ridge, it

will be reasonable to infer that when the canal reaches its highest elevation in the Alleghanies, it will not be closed by ice on an average more than thirty days in the year, while the Erie Canal is closed by ice about five months in the year, making a difference of one-third of the year in favor of the Virginia water-line, and that at the very season of the year when the agricultural products of the West are seeking an eastern market.

In this statement the number of days of suspension during the year are aggregated.

I regret that I cannot give the precise information of the date of each day of suspension in each month and year. Our reports are not made in this form, because these suspensions by ice are not continuous, but generally for short periods and at intervals. From my observation during my connection with the canal since 1867, and from information derived from intelligent parties with long experience in navigation on the canal, I believe that these suspensions would have been greatly reduced in time and number by the use of ice-boats. Indeed it is not improbable that ice-boats and a full traffic would have kept open the navigation during the entire year.

Before the division of Virginia the entire line from Richmond to the Ohio River was under the control of the James River and Kanawha Company, but from Richmond to Buchanan and the Kanawha River were the only portions actually used for navigation. The late Mr. Fisk, chief engineer of the State of Virginia, in charge of the Covington and Ohio Railroad, the portion now of the Chesapeake and Ohio Railroad between Covington, Virginia, and the Ohio River, was employed by the James River and Kanawha Company to survey the Kanawha River with reference to its improvement, and reported the average suspension of the navigation of the Kanawha River by ice as fifteen days. This was confirmed by Mr. Lorraine in his report of the survey of the same river, and is true, doubtless within the knowledge of the many parties now using that river as a channel of transportation. The only part of this line as to which there is not this conclusive evidence, derived from its actual navigation, is from Buchanan to the navigable waters of the Kanawha River. This includes the summit-level.

The committee appointed by the National Board of Trade "to fully examine" and report to the board with reference to this line, say in their report, p. 94:

The summit section being a tunnel will never freeze. The unvarying temperature of the tunnel through the Hoosac Mountain, in the high latitude of Massachusetts, is 52 degrees the year round. The temperature of the proposed tunnel through the Alleghany Mountains for the summit-level will probably not be lower than that of the Hoosac tunnel. The elevation of the former tunnel is only 1,700 feet above the level of the sea, and it is more than three degrees of latitude to the south of the Hoosac.

Buchanan, the present terminus of the canal, is 812 feet above tide, and the difference between the opening of canal navigation at this point and through the mountain section, and from Lynchburg to Richmond is about one week. The balance of this incomplete part of the line is chiefly slack-water navigation, and the larger portion of this on New River, which has its source south of Virginia, in the State of North Carolina. "Ice forms less in deep water. In ten years, from 1845 to 1855, inclusive, the greatest number of days of suspension of navigation on the slack-water of the Monongahela River was 33 days, and in 1868 and 1869, none. The average number of days of stoppage by ice for the whole period was $15\frac{1}{2}$ days." (Turpin's report, p. —.) If true of the Monongahela slack-water, how much more will this be true of the New River, rising as it does in North Carolina, and entering the Ohio river 263 miles by river below the mouth of the Monongahela. The estimate of the time of suspension of navigation by ice is 15 days for the eastern and western portions of the line, and 30 days for the

middle or mountainous. I submit that the facts just stated, including those ascertained from many years of actual experience in the navigation of a portion of this line, which has passed twenty miles beyond the Blue Ridge Mountains, and reached an elevation of 812 feet above tide, considered in connection with the mechanical aid to a continuous open navigation to be derived from the use of ice-boats, and from the passing of boats necessary for the transportation of a great amount of tonnage, justifies this estimate.

By the CHAIRMAN :

Q. Have you given any attention to the value of the Ohio River between its mouth and the Kanawha River for commercial purposes?

A. I have given some attention to the reports of the distinguished engineers of the United States who from time to time have made reports on the improvement of the Ohio River. These reports seem to exhaust information about the river both above and below the mouth of the Kanawha, but I am not prepared even to repeat this information in its detail with sufficient confidence as to accuracy. The navigation of the Ohio is better below the mouth of the Kanawha than above, because there is more water and less ice and less fall to the mile, and I believe fewer shoals. There is this special interest in its improvement below the mouth of the Kanawha, that at this point (Point Pleasant) the connection of the Ohio River with the sea by the central water line begins. The river below connects this line with the great river system of the valley of the Mississippi, and the improvement of this portion of the river is necessary to make the line of satisfactory benefit to the country. But the line is also to give an additional mouth to the whole river, which extends not only 264 miles above the mouth of the Kanawha to the great manufacturing city of Pittsburgh, (967 miles from the mouth of the Ohio,) but beyond, with navigable water for more than 200 miles in its true channel, the Alleghany River, and, through its own channel, and those of its tributaries, "directly influences the industries of fourteen of the States, but directly circulates the commodities of every State in the Union." (P. 9, rept. 76, Forty-second Cong., third sess.)

With the permission of the committee, I will read the concluding portion of the report of Mr. Lorraine to Colonel Craighill, of the examination and survey of the Kanawha River, returned in December, 1872, with the report of that officer upon this subject to the Chief of Engineers of the United States. I wish to say in advance that the known professional courtesy of Mr. Lorraine forbids any inference that his reference to the Ohio River in this extract from his report was designed other than to ask consideration of his suggested mode of improvement for the Kanawha River as applicable to the Ohio, and more especially to give information of the value of the Meadow River reservoir in furnishing any needed supply of water to both streams.

In comparing the merits of the above plans for the improvement of the Kanawha River, due consideration should be given to the probable future improvement of the Ohio, as the navigation of the tributary should be made to conform as far as practicable to that of the main stream. The improvement of the Ohio would not be long delayed if there was any unanimity of opinion as to the proper plan for effecting it. If the open-dam improvement should be tried on the Kanawha, and should prove to be a success, it would doubtless decide the character of the Ohio improvement, and result in its immediate adaptation to that stream.

It will be a matter of interest to see what effect the proposed reservoirs on the tributaries of the Kanawha would have on the Ohio, if that river were improved by open dams.

Cubic feet.

Allowing the channels in the dams to be 200 feet wide and $6\frac{1}{2}$ deep, with 6 inches fall from pool to pool, the discharge through them would be
4,419 cubic feet per second, or per day..... 381, 801, 600

Adding to that the allowance for wastage over the dams double what was allowed on the Kanawha	\$35, 942, 400
We have the total supply necessary for the Ohio.....	417, 744, 000

With two feet depth of water on Wheeling bar, the discharge of the Ohio at Wheeling in twenty-four hours, by Mr. Ellet's measurement was....	228, 000, 000
Add to this amount the low-water discharge of the Kanawha.....	116, 640, 000

And we have for the low-water discharge of the Ohio at Point Pleasant.. 344, 640, 000

Which deduct from 417,744,000, will leave 73,104,000 cubic feet as the amount per day necessary to be supplied during the period of low water. But we have seen that the reservoir on Meadow River will supply to the Kanawha 10,722,000,000 cubic feet per annum. It will then supply the deficiency on the Ohio for 146 days.

It appears then, that this one reservoir on Meadow River will be more than sufficient to supply the deficiency on the Ohio River during the whole period of low water, provided the stream can be so improved as to throw nearly all the water into channels of the width and depth described above, and having not more than six inches fall from pool to pool. The fall in the Ohio below Point Pleasant being much less than the fall in the Kanawha, the dams on the Ohio could be so arranged as to give not more than three inches fall from pool to pool.

That such an improvement is practicable, that it could be made at a very moderate cost, and when made that it would answer all the purposes for which it was intended, can hardly be doubted by any one who will give the subject serious consideration.

From the report of Col. W. Milnor Roberts, United States civil engineer, on the survey of the Ohio in 1870, I ascertain that between the mouth of the Kanawha River and the mouth of the Ohio there are 237 miles of shoals and ripples.

The estimated cost of the improvement of the Kanawha River by open dams is \$488,833, or \$6,188 per mile. Allowing the cost of improving the Ohio to be double that of improving the Kanawha, or say \$12,500 per mile, and that 250 miles would require improving, the total cost of preparing the river would be \$3,125,000, to which add the cost of the Meadow River reservoir, \$533,200, and we have \$3,658,200 for the total cost of the improvement of the Ohio River below Point Pleasant, so as to give six feet navigation all the year round.

It is not my province to report on the improvement of the Ohio River, but the Kanawha and the Ohio are so intimately connected that the improvement of the former without that of the latter would be almost useless, and as any plan that would succeed on the one would be applicable to the other, I have deemed it not inappropriate to throw out the above suggestions in regard to the Ohio for the thoughtful consideration of those who may be intrusted with the recommendation of a plan for the improvement of that river.

By Mr. DAVIS:

Q. What is the size of your present canal-locks, and the contemplated size?

A. The locks are 100 feet long between the gates, and 15 feet wide in the chamber. The locks on the canal, as proposed, from Richmond to Howard's Creek, (274 miles,) will be 120 feet long between the gates, and 20 feet wide in the chamber. From the mouth of Howard's Creek to the foot of Paint Creek Shoals, (118.39 miles,) where the open river navigation will begin, the proposed locks will be 240 feet long, and 40 feet wide. Mr. Lorraine states in one of his reports that the supply of water at the summit-level will be abundant for vessels of 500 tons. It would be greatly to the interest of the commerce of the country, in further reducing the cost of transportation, if the locks from Richmond to the mouth of Howard's Creek were of the large size of those proposed west of that point.

Q. My question was as to what the estimates were made for.

A. For locks 120 by 20 feet from Richmond to the mouth of Howard's Creek, and beyond 240 by 40 feet. If the locks were all of the large size mentioned, then steamboats and tugs towing barges of the dimensions just described by Mr. Parks could traverse the whole line to the capes of Virginia, and beyond, certainly by the bays and sounds on the sea-board, and other inland waters which have been mentioned. There is no official estimate of the increased cost of substituting these

large locks for those proposed between Richmond and the mouth of Howard's Creek, but an unofficial estimate, if I may say so, of \$8,000,000.

Q. Now as to cost of improving the Ohio, I understand that there has been an estimate of it. Can you give any data, dividing that estimate between the part above and below the mouth of the Kanawha?

A. My impression is that the estimate of Mr. Roberts for the improvement of the Ohio by locks and dams above the mouth of the Kanawha was about \$10,000,000, but I do not recollect his estimate for the improvement below the point.

Q. What is now the depth of water in your canal, and what contemplated?

A. The original depth was 5 feet, and now from 4 to 5 feet.

Q. What will it be with the improvement?

A. The proposed depth of the canal is 7 feet, and of the slack-water west of the summit-level, and in the Kanawha River, not less than 6 feet.

Q. You have the data, I believe, as to the navigable waters with which this canal will be connected, and also of the products of that immediate region which will be drained by it?

A. Do you mean of the whole region of country which will be tributary to it?

Q. I mean what are the number of miles of navigable waters of the West through which this canal would draw freight?

A. This central outlet to the sea-board would be in connection with all of the connected navigable waters of the valley of the Mississippi; even with the lakes, through the Fox River and Wisconsin, the Illinois, and Michigan, and Ohio canals. There are nearly 17,000 miles of steamboat navigation in the Mississippi Valley. The great lakes have a shore line of 3,620 miles on the American side. Much the larger portion of this steamboat navigation is now and will be more and more interested, as the country is occupied, in using this line, because of the coal, iron, and salt which so abound in the country through which it passes, and which will be so largely developed by it. Through these minerals, furnishing return freights, the tonnage eastward will be increased beyond the number of miles of this steamboat navigation, which will be nearer to New York and Liverpool by this route than by any other. Probably more than one-third of this navigation is thus nearer to those cities when the existing and proposed water-routes are all open. This estimate does not include the slack-water and canal navigation for boats other than steamboats, which would be nearer by this line, or the streams which may be made navigable, or the miles of this steamboat navigation which would seek this route when the water-lines north of it are closed by ice. But the competition of trade and navigation resulting from the completion of this route—and more especially if one of a system of such routes to the ocean—in its influence in reducing charges of transportation, practically connects it, not only with all of this steamboat navigation, and with the lakes, and the whole system of navigable waters of the valley of the Mississippi, but also through the influence of this competition with the great lines of railroad from that valley to the sea-board. These water-routes—meaning by these the improved rivers of the West, and their extension at proper points eastward to the ocean—will not only provide adequate transportation for the products of the distant West, but without aggression or injury (I might say to their great benefit) practically deprive the great railroad corporations of the power of taxation and control, in a measure, over the value of the products of the country through rates of transportation, and secure to the country the needed

transportation of rail and water both, controlled in their rates of transportation by a healthful competition, and both important to the interest of every citizen and every interest of the country.

Q. Do you know what portion of the population of the whole country, in inhabitants and wealth, these navigable waters nearer by this route will drain?

A. I have not prepared precisely that statement, but will attempt to do so, if desired. The rivers are portions of the Ohio, Mississippi, and Missouri, as I have mentioned, and a portion of their branches. The boundaries of the tributary country bordering these navigable waters cannot be described in their very line, but with sufficient accuracy, and then its population and wealth might, I suppose, be ascertained. Mr. McAlpine said twenty years ago "that the dividing line of trade between the Virginia and New York canals, when the former and the enlargement of the Erie Canal are completed, will be 110 miles north of Portsmouth and Cincinnati."

In the annual statement of the trade and commerce of Buffalo for the year 1865, reported for the Buffalo Board of Trade by Mr. E. H. Walker, that gentleman says:

Were this canal as large as the present Erie Canal, notwithstanding its numerous locks, and its nearly 1,900 feet of lockage lift, about the same as that of the Genesee Valley Canal, it would, from its being open nearly all the year, be a strong competitor for the trade of the Western States. The Ohio River is as free as the lakes, with the distance from the Mississippi to Point Pleasant about the same as from the Mississippi to Buffalo. The States west of the Mississippi, including Missouri and Iowa, and those States immediately west of these States on the Missouri, as well as the southern portions of Illinois, Indiana, Ohio, and Kentucky, would be more immediately tributary to the James River and Kanawha Canal than to the Erie, unless ship-canals should be constructed through Ohio and Indiana.

The Hon. Israel D. Andrews, in his report on colonial trade, says of this canal:

Could this canal be carried into the Ohio Valley with a sufficient supply of water there can be no doubt it would become a route of an immense commerce. It would strike the Ohio at a very favorable point for *through* business. It would have this great advantage over the more northern works of a similar kind, that it would be navigable during the winter as well as the summer. The route after crossing the Alleghany Mountains is vastly rich in coal and iron, as well as in a very productive soil. Nothing seems to be wanting to the triumphant success of the work but a continuous water-line to the Ohio.

These gentlemen would no doubt have conceded larger boundaries to this central water-line, with its lockage lift reduced nearly 200 feet and a canal enlarged beyond the present capacity of the Erie Canal.

The "equidistant line" of Commodore Maury, found in one of the maps of his able work, "Physical Survey of Virginia—Her Geographical Position—Its Commercial Advantages and National Importance," indicates the country geographically nearer to New York and to Norfolk, and shows a part of the Territories of Wyoming and Dakota and the country a short distance below La Crosse and Milwaukee and Cleveland as south of that line, and in actual distance as nearer to Norfolk. The extract which I read to the committee from the memorial of the Louisville and Cincinnati commercial conventions probably presents this subject in its more practical light. Though I cannot now give in figures the information asked, I will venture to say that the country which will be conceded as tributary to this work, in the commercial character of its sea-board, in its climate, in the variety, abundance, and quality of its minerals, especially of coal and iron, the basis of the greatest national wealth and power, and in its capacity for production of all necessary to the existence and comfort of man, has not its superior on the earth within boundaries of equal extent.

As shedding some light on the subject of inquiry, I will give the sub-

stance of a written statement of a gentleman who obtained the facts which it contains, or the basis of these facts, from the report of the Commissioner of Agriculture. In 1871 the States of West Virginia, Tennessee, Kentucky, Ohio, Indiana, Illinois, Missouri, Arkansas, Wisconsin, Michigan, Iowa, Kansas, Nebraska, and the Territories on the Missouri River, raised 35,490,757 tons of agricultural products.

This statement does not include live-stock, salt pork, and beef, or the products of manufacture, or of the forest, or mines. After deducting the usual allowance for consumption, he assigns one-third of the remainder, or 7,000,000 tons, to the central water-line, which he regards as its smallest probable share. To this is to be added the tonnage produced on the line, which, from twenty iron furnaces alone in the transportation of raw material and product, would probably be equal to one million of tons annually. Two million tons of coal were shipped from Pittsburgh down the Ohio River in 1869. (Roberts' Report on Ohio River, Appendix A, p. 188.) In the report on the Newport and Cincinnati bridge, it is stated "that the commerce on this river in coal, iron, and salt, and other bulky articles, has yearly increased at an average rate of 20 per cent."

The Kanawha coal-fields would no doubt in a short time after the completion of this line furnish not only the 2,000,000 tons, but an ever-increasing number of tons for shipment east and west. The quality of the bituminous coals of this region are equal, and in all of their variety probably superior, to those of any other region of the country, and none can be more cheaply worked. Indeed, under the influence of free, cheap, capacious water transportation, the demands for these coals would constantly and rapidly increase, and as their quantity (I may say and be understood) is without limit, the capacity for their transportation will after a time be the practical limit of their consumption. The coal and iron accessible to this line would greatly contribute to the supremacy of the United States in manufactures. Soon after its completion the country would practically cease to import either coal or iron. The fitness of this line for manufactures is very great. It has the climate and coal and water-power at its dams, is in the vicinity of the grain of the West and cotton of the South, with the Chesapeake and Ohio Railroad on its border for a long distance, with its low grade giving the two kinds of transportation, which supplement each other.

Q. Have you estimated what the tonnage passing through the canal would have to pay to keep it properly in repair and in good working order? In other words, what would be the charges per ton or per bushel?

A. Less than one-third of one mill per ton per mile. This rate of toll on 7,000,000 tons of through freight would yield more than \$942,000, or \$2,000 per mile for 471 miles, the actual length (less .44 of a mile) of the line. This is \$1,193 per mile more than the average annual cost of repairs for eighteen years of the James River and Kanawha Canal in its mountain district from Lynchburg to Buchanan.

There is no reason within my knowledge why the annual cost of repairs of any portion of the projected line should exceed this sum. I believe that it was the opinion of Mr. Lorraine that the annual repairs of the line west of Buchanan would be less than those of the mountain district just mentioned.

Q. What would that be per ton through the whole line?

A. About fifteen cents.

Q. Do you know the relative cost of canal and open-river navigation?

A. Yes, sir. I have seen some of the opinions expressed as to this relative cost. On this line, reduced to a level as explained, there would

be 355½ miles of canal and 254.44 miles of river navigation. For the reasons given, I believe that the carrier charges on this canal portion will not exceed three mills per ton per mile, and on the river portion two mills. The tolls at the rate adopted, and the cost of transfer of cargoes, where such transfers are made, added to these carrier charges, will constitute the charges of transportation over the line. The approach to the line from the east and west will be by ocean, inland seas, and open river; all free of toll and subject only to carrier charges, probably at lowest rates. The transfers referred to may be, one at or near the mouth of Howard's Creek, where the ship-locks are changed to canal-locks, and another at or near the capes of Virginia, when the cargoes are transferred to sea-going vessels. Parties shipping grain from Saint Louis to New Orleans say that cargoes of grain would be improved by the ventilation of the first transfer. The cost of this transfer may be avoided by the barges towed through the ship-lock being adapted in size to the canal-locks, or by the enlargement of the canal-locks as suggested. The second transfer may be avoided by the inland sea-routes, except as to shipments abroad. These transfers are quickly made at small cost by floating elevators.

Before concluding, I ask permission to say a word about canal-tunnels. I remember that during the session in 1869 of the National Board of Trade I was asked whether any canal, in this country or abroad, had a tunnel, and, for the want of information, I made a very unsatisfactory answer. I have not since made any special search for canal tunnels. I did not see the necessity of attempting thus to sustain gentlemen of great professional ability and experience, who as engineers, after due examinations and surveys, or after due consideration of such surveys, in their official reports, and not less carefully prepared written papers, had expressed clear and decided opinions, without dissent or qualification, favorable to the construction of the proposed tunnel on the summit-level of this canal. But in reading the life of James Brindley, the great constructing engineer of the canal of the Duke of Bridgewater, from his coal-mines at Worsley to Manchester, and of the Grand Trunk Canal, connecting the Mersey with the Trent and Severn, and one of the eminent hydraulic engineers of England during the last century, I found that canal-tunnels had been constructed in England one hundred years ago, and had been in successful use ever since. The Bridgewater Canal was completed in 1761, and during the life of Brindley was carried by a tunnel about one mile through rock to reach the coal, and this tunnel has been extended for the navigation of coal-boats until now; it is nearly forty miles long in all directions. The Grand Trunk Canal was finished in 1777, and is one hundred and thirty-nine and a half miles long, connecting by a grand line of water communication the ports of Liverpool, Hull, and Bristol. It penetrates at Harecastle the ridge which is the continuation of the high ground forming what is called the "backbone" of England, and passes through this ridge by a tunnel 2,880 yards long. There are five canal-tunnels on this canal of the aggregate length of 5,160 yards. Telford subsequently constructed for the same canal a parallel tunnel of larger size through this ridge, and the North Staffordshire Railroad also passes through it by a tunnel almost parallel with the line of both canal-tunnels. These canals met with the opposition which great and meritorious enterprises in their beginning have so often encountered. The proposed tunnel at Harecastle was especially the object of ridicule. Its projectors were charged with the intention to deceive the public, because they knew that this "chimerical idea," as it was called, could not be carried into effect. But these canals and many others with tunnels were built, and it is impossible to estimate what

they did to give wealth and power to England and to advance its civilization, and as an essential part of the great system of commercial communication of that country, what they continue to do to increase its greatness. (Smiles's *Lives of English Engineers*. Life of Brindley.)

I have been furnished with the following in connection with canal tunnels; it is taken in substance from Creesy's *Encyclopedia of Engineering*:

In Great Britain, on twenty-six canals, there are fifty-one tunnels, embracing in the aggregate more than fifty-two miles of tunneling, (seventy-two miles,) the principal of which are as follows:

The Cromford Canal has a tunnel at Ripley one and seven-tenths miles long.

The Dudley Canal has three tunnels—one 2 miles and 256 yards long, another 623 yards long, and a third one and two-thirds miles long. Total, 4 miles and 275 yards.

The Grand Junction Canal has one tunnel which is 1 mile and 235 yards long, and another, the famous Blisworth tunnel, which is one and three-quarters miles long.

On the Hereford and Gloucester Canal there are three tunnels, embracing two and one-quarter miles.

On the Huddersfield Canal there are two tunnels, one of them 3 miles and 270 yards long.

On the Leominster and Kingston Canal there is a tunnel 1,250 yards long, and one 2 miles and 330 yards long.

On the Thames and Midway Canal, which is 50 feet wide and 7 feet deep, there is a tunnel two and a quarter miles long, which is 30 feet wide and about 40 feet high.

On the Thames and Severn Canal the Tarlton tunnel is two and three-eighths miles long.

In France there is a tunnel on the Languedoc Canal 281 yards long, and on the St. Quintin and Cambray Canal, joining the Somme and the Scheldt, there are two tunnels, one 1,200 yards long, and another three and a quarter miles long. These tunnels are 26 feet wide.

In connection with the completion of this central water-line, I submit to the committee the memorials of the States of Iowa, Kansas, Kentucky, Ohio, West Virginia, and Virginia, also the report of the committee appointed by the National Board of Trade, and the memorials of that body and of the Louisville Board of Trade, and commercial conventions of Louisville, Cincinnati, and Baltimore, and "of the delegates to the National Board of Trade on the subject of the James River and Kanawha Canal, reported in the Cincinnati Chamber of Commerce, and approved March, 1870."

WILLIAM C. WICKHAM, vice-president of the Chesapeake and Ohio Railroad:

I came, gentlemen, at your instance, and brought with me Mr. Whitcomb, the chief engineer, and the superintendent, in case there were any points upon which you would like their views.

By Mr. SHERMAN:

Question. Please state the length of line of the road you represent—the Chesapeake and Ohio—the commencement, its terminal points, the capital stock, and all the facts that bear upon the line, its gradings, &c., and any facts or any points that you may think give it an advantage over competing lines. Take your own way of doing it.

Answer. I had no intimation until to-day that there was any desire for us to appear before this committee. I understood that it was solely in regard to the canal that you were here, and, consequently, have made no preparation, but such information as you have suggested I am, of course, perfectly ready to offer.

Q. The subject committed to us is the whole subject of transportation, and we have been examining into the great railroad lines that compete with you—the Erie Road, the Baltimore and Ohio, the Pennsylvania, and the New York Central, and, as a matter of course, have examined

into the water-channels. We desire to examine into your means of transportation from East to West and West to East.

A. I will commence, then, sir, by premising that this is a new line of ours. For the first time within the last eight months it has been opened from the Ohio to the James. The distance is four hundred and twenty-two miles from Richmond to Huntingdon, on the Ohio River, which is about seven miles above the mouth of the Big Sandy, at the mountain-line. We are just now about completing a branch, an extension of two miles in length, from Richmond to the docks upon the river, so as to bring us immediately in connection with the water at both Huntingdon and the James. Our present connections are simply the steamers on the Ohio River, where we have to transfer our freight. Our purpose has been, and is, to form a connection as rapidly as possible through Kentucky by way of Lexington to Louisville, which will be a distance of two hundred and thirteen miles, which, added to the 122 and five more that intervenes between the Kentucky line, makes it 640 miles to Louisville.

Q. Louisville or Lexington?

A. To Louisville. I have here a table of these distances, to which I will refer. I find a comparison of distances made in this pamphlet, which was published by the financial agents of the company, Fiske and Hatch, upon information, of course, furnished by our engineers and prepared for them. I do not desire to be understood as drawing any special comparison as against any other line, but this sums the distances between Richmond and Cincinnati by our line; and by its proposed connection by rail through Ohio it is about one hundred and fifty miles from Huntingdon to Cincinnati. The distance from Richmond to Cincinnati is 573 miles, while by the Baltimore and Ohio Railroad from Baltimore to Cincinnati is 591 miles. Philadelphia to Cincinnati is 668 miles. Those are the two lines, I presume, coming in comparison. Then to Louisville 640 miles by our line, 699 by the Baltimore and Ohio, and 775 from Philadelphia by the Pennsylvania Railroad. To Saint Louis, 890 for our line, 931 for the Baltimore line, and 992 for the Pennsylvania line. Then the distances to Memphis and Nashville are formed by adding the distance between Louisville and that point, making each one that much farther.

We claim that when we get our connections through ours will be the shortest and cheapest route between those cities with the West. When you come to the cities on the more northern border, the other lines, of course, have the advantage, so that to Chicago we are a fraction farther. It is 832 miles to Chicago by our line, while it is 828 to Baltimore, and 823 to Philadelphia. To Indianapolis we have slightly the advantage, 688, 705 for the Baltimore line, and 736 for the Pennsylvania line, but to Columbus both of them are ahead of us; we have 564, the Baltimore and Ohio 517, and the Philadelphia and Pennsylvania Road 548 miles.

As our road is now running we have a section of grade running to seventy feet as against the Western freight, over the North Mountain and the Blue Ridge. That, of course, makes it more expensive than it would be if our grades were there as they are west of Covington, from Covington to the Ohio River down the valleys of the Greenbrier, New River, and Kanawha, not exceeding thirty feet to the mile. The purpose of the company is to construct a branch from Clifton Forge down the James River by way of Lynchburgh, coasting on the James to Richmond, by which we will maintain the same grades that we have now west of that point. That would give us a line with a grade for the whole distance not exceeding thirty feet to the mile.

Q. Coming eastward?

A. Yes, sir, coming this way ; running up to 60 the other way. Our idea is that by affording probably the shortest and cheapest route between the waters of the Ohio and the Atlantic we will be able to transport on easier terms the products of the West, and that we will, if we can, turn the trade in that direction, and naturally bring trade to meet it here. The coffee trade of South America and the sugar trade ought both to be commanded by the wheat trade here, and that would give us returning freights upon those articles. Of course, that will take a good deal of enterprise on the part of the people who have to handle these things. It will depend as much on their activity as it will upon our capacity to carry.

As to your question in regard to the stock and so on of the road, I have in my hand the report of 1872. We have not yet made up our report of 1873, and I have not, therefore, in the short time I had, prepared an exact statement of the thing as it now stands. I will preface that by saying that our authorized capital stock is \$30,000,000; the subscribed stock is \$11,236,000; the funded debt of the company at the period at which this was published was in round numbers \$19,000,000, and the cost of construction to that time was in round numbers \$25,000,000.

Q. Bonds and stock were more than cost of construction ?

A. I was going to say that I have not brought the equipment into that calculation, nor discount and interest.

Q. The equipment was not counted in the construction ?

A. No, sir; that was simply the construction of the road and the building.

Q. Thirty million dollars is about the total of your liabilities, capital stock and debt ?

A. Thirty-six million dollars at that date.

Q. You said \$19,000,000 of bonds and \$11,000,000 of stock, that would make \$30,000 ?

A. Yes, sir.

Q. That is increased how much ?

A. It is difficult for me to say, sir, because we have not made up our statement, but it has been considerably increased since that time. There has been a sale of several millions of bonds since that time.

By Mr. DAVIS:

Q. How are the eleven millions of stock paid; how much did you put the old road of the Virginia Central in at ?

A. Eight million dollars.

Q. What did you actually pay the State for the road ?

A. It was turned over to us on condition that we would complete the road.

Q. You paid her something ?

A. No, sir; nothing, except for the Blue Ridge tunnel. We paid for the Blue Ridge tunnel in State stock that they had paid them for the Blue Ridge tunnel about \$700,000 in State bonds. The road at the period of its change into the Chesapeake and Ohio Railroad was called the Virginia Central Railroad. The State had, years before the war, commenced the construction of a road from Covington to the Ohio River, and the war, of course, broke all those arrangements up, and they had expended some three and a half millions of dollars upon the heaviest work on the line, a great deal of the heavy work between Covington and the White Sulphur Springs.

Q. You speak of the Covington and Ohio ?

A. Yes, sir. When everything was started again after the war the

State found that they could do nothing with this work, and the two States put the road into the hands of commissioners, with power to make the best contract that they could for the completion of the road. After some two or three years, and a good deal of legislation one way and another, they finally made a contract with the present managers of the road to turn over the State's interest in the road, except her stock, of which she still has \$2,000,000; turn over her interest in the Covington and Ohio Road, on condition that this company would complete the road in a given time and put it in operation to the Ohio River, which they did, and that contract with these commissioners gave these parties the authority to issue such an amount of stock, in consideration of the donation by the State of three and a half millions of work that had been done.

Q. How much did you pay the State for the three millions and a half of work?

A. We pay her the completion of the road, which would not have been completed otherwise.

Q. You bought the Virginia Central from the State?

A. No, sir; we are stockholders in the Virginia Central Road. The stockholders in the Virginia Central are stockholders in the Louisa Railroad.

Q. Was not the State a stockholder in the Virginia Central?

A. And is still in the Chesapeake and Ohio to the extent of \$2,000,000. To the same extent that she has always been.

Q. Do I understand you that the State owns the same amount of stock in dollars in the present Chesapeake and Ohio Road that she formerly owned in the Virginia Central?

A. To a dollar. Exactly the same, sir.

By Mr. NORWOOD:

Q. And \$2,000,000 in the other road?

A. It is nothing but the name. If she has a certificate, and I suppose she has, parts of it are in the name of the Louisa Railroad and parts in the name of the Virginia Central Railroad.

By Mr. DAVIS:

Q. The State of West Virginia, as I understand, gave or donated with the franchise whatever might have been expended by her, without cost?

A. Exactly, sir.

Q. There was no stock issued to her for any part of that?

A. O, no; nor to the State of Virginia. The stock which Virginia now holds in the Chesapeake and Ohio Railroad Company is the same stock which the two States, when one, held in the Virginia Central Railroad Company, and, of course, is a part of the assets of the State.

Q. Do you recollect what that amount is, sir, that the State owns in your road?

A. Yes, sir; two million dollars and odd.

Q. You get from the State the road to Covington, I understand. How was the other \$9,000,000 made up?

A. There was part of it existed as stock in the Louisa & Central Railroad, originally. I have not the figures here. I see this report does not give the figures before this additional stock. When this road was originally built it was built upon what was called here in Virginia the two and three-fifths principle; that is, the State subscribed three-fifths and individuals two-fifths, and that was the stock of the Virginia Central Railroad prior to its conversion into the Chesapeake & Ohio Railroad. When the contract was made there were certain land subscrip-

tions made, which form a small item of preferred stock, which is there, and the balance was the stock which was issued to represent this work which had been previously done upon the Covington & Ohio Road, and to represent the property in the Blue Ridge Railroad, which was bought from the State by these parties. If you will permit me, however, I do not see exactly how that bears upon the question of transportation.

Q. It has been the habit of the committee with reference to railroads to inquire in what way their stock has been made up. There is a good deal of talk in the country about watering, and that they did not cost what is represented, and it has been generally explained to the committee.

A. I understand. Of course I have not the slightest objection, because this thing is all here in our report, but at the same time I supposed that it was a question to transportation, and I certainly have not looked into these subjects. What I am telling you now is merely from a general knowledge of the subject without referring to the data. I am ready, however, to answer any questions.

Q. Has the State a direction in your road?

A. No, sir. The directors are elected by the stockholders, each stockholder having one vote for each share, and the State having the same number of votes for each one of her shares. She votes as a stockholder in the stockholders' meetings, and the directors are elected at those meetings.

Q. I had understood that your company had bought out the State's interest; but I was wrong in it according to your statement.

By Mr. SHERMAN:

Q. Has your road been running long enough so that you can give us any idea of the general nature of its business, what its transportation is, &c.?

A. I can scarcely say that it has, with a bearing upon the future, owing to this trouble of the transfer at Huntington, but we carry whatever is produced in the West. We bring it eastward, and whatever is produced or offered for sale from the East to the West we carry westward. Our principal item just now is grain and bacon from the West. I speak now of the through business, and not of the local business; tobacco, manufactured, some naval stores from North Carolina, and so on, and merchandise from this point and from New York and Philadelphia.

Q. What kind of a coal trade have you, and what kind of coal?

A. We have the cannel-coal, regarded as the most valuable, selling at a higher price than others. Our transportation of that is quite handsome. There are but two mines of that coal in operation. Nearly the whole of it is shipped to New York, where it is being taken up for the gas-houses. The next coal is the splint-coal, which is a very fine fuel, and is regarded also as particularly valuable for the working of iron, being free from sulphur.

Q. How much of the line of your road is through what is called a coal country?

A. There has recently been opened up what they claim is going to be a very valuable coal-basin, upon the New River, which extends the line a good deal east of the point which it had previously been supposed it could be worked advantageously. I suppose that the distance is now about 80 miles upon which veins are worked that we run through; but beyond that, down to the Ohio River, there is coal from point to point, but still, west of Charlestown, it is only worked for the purposes of the neighborhood.

Q. You have a coal-bed, then, from the mountains to Charlestown?

A. Yes, sir; from a short distance below the mouth of the New River, where the Greenbrier enters, to Charlestown. The coal on the New River, though, is a bituminous coal, and is not supposed to be as valuable as that splint-coal, but is a fine coking coal.

Q. Have you iron-ore on the line of your road?

A. Yes, sir; at various points, but principally between the Blue Ridge and the Alleghany, in very large quantities. The iron-masters from Pennsylvania, several of whom have settled there and established furnaces, speak in very high terms of their prospects. Their idea is that they can manufacture pig-metal at a smaller cost considerably there than they can in Pennsylvania.

By Mr. CONKLING:

Q. In which counties is that?

A. Alleghany and Rockbridge are the two principal counties; some in Augusta.

Q. What do you mean by saying there are only two mines of cannel-coal?

A. There are only two mines in operation. There are only two companies who are mining the cannel-coal.

Q. Anywhere?

A. On the line of the road.

Q. Within what extent do you mean? Do you mean directly on the line of your road?

A. Well, near enough for us to transport it.

By Mr. SHERMAN:

Q. Do you mean that there are but two places where there is such cannel-coal, or only two opened?

A. Only two opened. There are several other points on which the cannel-coal can be developed, and we are expecting that it will be developed at once. The deposit is a considerable one, but it has so happened that but two of these mines—which were both of them established previous to the war, one on the Gauley River, and the other immediately upon the Kanawha, and but a few miles below the falls of the Kanawha, below its junction with the Gauley—had been worked prior to the war, and, they being in condition, have been developed since, and have been quite actively worked, especially since they have had this outlet to the east. There was a Paint Creek company which worked a mine formerly, but they are not now working it. The difficulty here of transfer through this city of Richmond, until we got this connection which we are just about completing to the water, has impeded considerably the opening of these coal-mines. There has been a very considerable tax for drayage through the town, which has caused them to wait until they could see how they could get their coal immediately on the water, and we expect that will result in a great development of this cannel-coal, which is sold at \$16 a ton in New York.

Q. What do you charge per ton for the transportation of coal from the mines to Richmond?

A. A cent and a half a ton a mile.

Q. What is the distance from the coal-field to Richmond?

A. About 350 miles.

Q. About \$5 a ton, then?

A. Five dollars and nineteen cents, I think, it foots up, sir. For the splint-coal the charge is \$4.50 per ton for rather a longer distance, and the bituminous coal we expect to put at a lower rate still, according to the value of the coal.

Q. What do you call a ton?

A. Two thousand pounds. One idea that we have of the future value of the road is the fact of the iron and coal being about a hundred miles distant, and we expect to be able to transport the coal to the iron-mines, where they will have furnaces, and that the same parties will have furnaces at the coal-mines; so that we will bring return loads of ore, and avoid the hauling of deadwood over that part of the line.

Q. Is there limestone there?

A. Limestone, as a general thing, has to be hauled, but there are points at which the limestone is in very close proximity to the iron-mines.

Q. Do you claim any other advantage in your line of traffic of the through route except the question of distance and grade?

A. The distance, grade, and climate.

Q. To what extent does your climate give you an advantage, do you

A. We never have to stop a train on account of snow.

Q. Is that the only advantage?

A. There is no freezing, or rarely any freezing of pipes, or anything of that kind; but the great point is, that there is no stoppage by snow-drifts. I do not think that we have lost eight hours from snow in any one trip since I have been connected with the road.

By Mr. CONKLING:

Q. Is the mere matter of temperature, aside from snow, of no consequence unless it freezes your pipes?

A. Yes, sir; I think it is of some value; but still not enough to make any important difference.

Q. Understand my question, if you please. Is the matter of temperature, aside from snow, of any consequence, except in respect to freezing your pipes? Or, to put it otherwise, is it of any consequence in the effect that it has upon contracting iron and causing it to break, whether in wheels or axles?

A. I should not think that between our latitude and the Baltimore and Ohio there would be. If you go farther north I think there would be very considerable.

Q. Go to the New York Central?

A. I should think we would have a very decided advantage.

Q. In what regard?

A. That the rails would not be as apt to break as on the New York Central.

Q. The same thing as to all iron equipage?

A. I should think so, sir.

Q. Wheels, axles, and all that?

A. I should think so, though I do not pretend to be sufficiently an expert to answer that. My reason for saying it in regard to the rails is that it is a very rare thing that we ever have a rail to break, while I understand it is very frequently the case in the extreme cold weather of the northern latitudes that they do break.

By Mr. SHERMAN:

Q. What is your charge for passenger travel?

A. Our charge has been, until recently, about five cents per mile, but we have graduated that recently, so as to have it five and four and a half and four cents, according to the distances.

Q. Can you fix a tariff of freight, say fourth-class, including grain, &c.?

A. Yes, sir.

Q. Is that one and a half cents a ton a mile?

A. No, sir.

Q. I suppose you have not your tariff fixed on a permanent basis yet?

A. We started with them at what we hoped to be a permanent basis, and that was low. We took the Baltimore and Ohio tariff from Baltimore to Cincinnati, and started upon that, but then gentlemen got to complimenting the Pennsylvania Road, and the result was they got down a figure below their original freight, and we have not exactly got down to that yet. I do not know that we will have to do it, but when you get down to a cent and a half upon a good many articles it is hauling at a very low rate unless you have as much as your road can carry; then you can haul, of course, for vastly less.

By the CHAIRMAN:

Q. Less than one and a half, do you think?

A. I think so, sir; if you had enough of it to do.

By Mr. SHERMAN:

Q. Yes, a cent a ton a mile is what they charge, as a rule, on the New York Central, on certain classes of freight.

A. I think that with two tracks devoted to freight alone, and with a low rate of speed, there is scarcely—I am scarcely able to say how low you could carry freight. But then you have to have an endless chain of trains. You cannot do it if you have to keep up all your paraphernalia for a million of tons that you would for five millions.

By Mr. NORWOOD:

Q. Do these through-freight lines use your road?

A. No, sir; we have none of them on our road.

By the CHAIRMAN:

Q. Do you prorate with any water-line?

A. Yes, sir.

Q. On what terms?

A. They give us two miles for one of rail. They divide. For instance, one hundred and fifty miles of water is equal to seventy-five miles of rail.

Q. That is on the Ohio River?

A. Yes, sir.

Q. Do you prorate with the canal at all?

A. No, sir.

P. G. COGHLAN, secretary of the chamber of commerce of Richmond, Va.:

By the CHAIRMAN:

Question. Have you any general statements as to the commerce and business of this city prepared to present to the committee?

Answer. If I had known I was to be examined I should have prepared more fully, but I have a few facts here which I have prepared especially as to the foreign trade.

The principal exports of this city are tobacco and flour. The total exports of articles during the year ending the 30th of September, 1872, were 96,815 barrels of flour; this is direct exportation; 5,262 hogsheads of leaf-tobacco, 217 hogsheads of stems, 1,457 hogsheads of tobacco strips, and 2,422 bags of bark. Those were exported direct from Richmond. A good deal of produce goes foreign and from other ports. For instance, our flour is shipped to New York, and from thence to Europe and South America. The exports for the year ending September 30, 1873, show a large increased total export of leading articles during the year: 115,829 barrels of flour; 8,670 hogsheads of leaf-tobacco; 203 tierces leaf-tobacco; 580 hogsheads of stems; 424 hogsheads of tobacco-

strips; 337 tierces of tobacco-strips; 1,340 bags of bark; 48,000 staves and headings; showing a balance in favor of this year of \$800,000. That is, the foreign exports, as recorded in the custom-house books, exceeded those of last year. The freight of the Richmond dock has been increased very materially by the exportation of cannel-coal, 20,000 tons of which have been transported since the mines were opened.

By Mr. CONKLING:

Q. Exported where to?

A. To New York principally. I have also a statement showing the manufactured tobacco in this city for the nine months ending September, 1873, as compared with 1872, showing an increase of 3,000,000 of pounds. But there is a very remarkable diminution in the receipts of wheat. The receipts of wheat at the Corn Exchange for the three months ending September, 1873, show a diminution of 157,000 bushels, which is attributable to two causes—one that the crop of wheat is much less than it was thought it would be, and the other that a good many of the farmers are holding up on their wheat for higher prices. I have also a statement showing the tobacco-crop of the State of Virginia for the year ending the 30th of September, 1872, showing that the total amount is 88,792,152 pounds.

Q. Have you the crop of the year before?

A. No, sir; I have not.

Q. You have not it for this year, of course?

A. It is not made out yet.

Q. Have you not the crop for 1871?

A. I have, but I have not the book here.

Q. How does it compare, in general terms, with that?

A. It was the larger crop.

Q. Which was the larger?

A. The crop of 1872 was larger than the crop of 1871.

Q. How much larger?

A. I do not know.

Q. About what percentage?

A. I cannot tell you without turning to the record.

Q. What is the crop of 1873 as compared with 1872, so far as you have information about it?

A. It is supposed to be a very large crop, and it is supposed that it will exceed the crop of 1872.

Q. By considerable?

A. I cannot say how much, but the general opinion is that it exceeds it somewhat. I heard some questions put a while ago about mines. I have a statement here showing every mining operation in the State of Virginia in the year 1871, of whatever character or class; but that is too voluminous to be read here; I will furnish your secretary with a copy of the report.

Q. What kind of mines?

A. Coal, iron, and copper, and gold, principally.

Q. Any other mines?

A. Mica, pyrites, kaolin.

Q. Is that all?

A. That is all.

Q. Where is there a copper-mine, and what is it?

A. I do not recollect in what locality it is.

Q. More than one?

A. Yes, sir. From a statement of the gold from Virginia for

1858-'59-'61-'62, and so on, brought to the mint; in 1869 I observe that the amount was \$1,847.

Q. That was gold mined here?

A. Yes, sir.

Q. Where was it mined?

A. This report does not state, but there are mines in Buckingham; they are not in operation now.

Q. Is there any copper-mine in operation now?

A. No, sir.

MARSHALL PARKS, president of the Chesapeake and Albemarle Canal:

By the CHAIRMAN:

Question. Will you please give the committee any information which may occur to you as valuable in connection with your work?

Answer. This canal is one of the line of canals along the coast, extending from North Carolina to New York. There are the Albemarle and Chesapeake, Chesapeake and Delaware, and the Delaware and Raritan. They form the coast-line, avoiding the dangerous navigation of Cape Hatteras, and extend from North Carolina to New York and Long Island Sound. The canal was constructed especially with reference to steam navigation. It has no tow-path, and no means of any boat passing through except by steam. There never has been a boat passed through except by steam, or some time sail in a favorable wind. Of course it was an experiment in this country.

Q. State the length of your sections of canal.

A. There are 43 miles of navigation, of which 14 miles are cut through the land, the balance is improved river; slack-water and the improvement of the natural water courses. By those two links we are enabled to open an extension of the navigation of about 1,800 miles in the different rivers that are navigable for boats in Eastern North Carolina. The boats penetrate about 1,800 miles.

By Mr. DAVIS:

Q. Can you give us the size of your canal and the depth?

A. The locks are 40 feet wide and 220 feet long between the gates, and arranged for boats of 12-feet draught. Of course the canal is not now excavated to that depth, but the lock is put that low for the purpose of any future improvements.

Q. What locks are there?

A. We have only one tide-lock.

By Mr. CONKLING:

Q. No other lift-locks?

A. No sir; it is a very level country. You pass through a swamp.

By Mr. SHERMAN:

Q. From one tide-water to another?

A. Yes, sir; we find, strange to say, that, notwithstanding it is a great distance from the Atlantic waters that pass through Hatteras Inlet up to the head-waters of Northland River, yet the water is about the same as it is on Elizabeth; that is, at half tide in Elizabeth River, the waters are level. Hence we can open all the gates, and pass extensive rafts of timber through; sometimes half a mile or a mile can all go through without locking. We only use the lock when the tide is higher in the river than the water is in the canal. Hence the locks are of peculiar construction and have two sets of gates pointing in different ways. By this navigation we are enabled to go south as far as Beaufort, N. C.,

and thence for very light-draught steamers pass through some sounds and get nearly to Cape Fear River, and with very little outside navigation we go to Florida. In fact the navigation is considered so safe that I have sent these dredging machines down to Charleston, towed them down from Norfolk to Charleston.

By Mr. DAVIS:

Q. What distance is there saved by going through?

A. From the outside passage?

Q. I mean as between the outside and your route.

A. There is not much difference I think in distance. I do not think you save anything in miles. We only save a dangerous coast for small class vessels. There are no harbors from Cape Henry to Cape Hatteras.

Q. What size vessels do you let through now?

A. The largest, I suppose, we have now running through the canal are about 400 tons. But the locks are capable of passing 1,000-ton vessels. The business does not require yet any larger class vessels than that.

By the CHAIRMAN:

Q. What was the tonnage passed through your canal last year?

A. About 300,000 tons I think.

By Mr. NORWOOD:

Q. That is all local freight, is it not?

A. Yes, sir, that is local, lines of steamers running from New Berne to Washington and the Roanoke River to Baltimore and Philadelphia.

By the CHAIRMAN:

Q. What are your charges per ton per mile?

A. We do not charge that way. The company charge the vessels nothing—only the cargo—and that is so much a bushel, so much a bale of cotton—say twenty cents—and one cent on a bushel of grain. That is all the revenue the company derive. The balance is paid to the vessel for freight.

Q. Do you know what the freighters charge?

A. They transport from New Berne to Baltimore, which is about 400 miles, at twenty-five cents a barrel. It is about a half a cent a mile, or a little less.

Q. Twenty-five cents a barrel on flour?

A. Yes, sir; on flour. They carry some heavier articles, such as rosin, and naval stores, which are much heavier, for less than that.

Q. Is that an ordinary charge?

A. Yes, sir. A portion of the freight is about one-third of a cent a ton a mile. Of course there are other articles that pay a higher rate, but I am speaking of those heavy articles.

Q. I mean fourth-class freight?

A. In all this portion of North Carolina in former years, it was a habit, in clearing land, to cut the trees down and burn them. Now they have all been made valuable by this work, and are transported north. The Baltimore and Ohio Railroad lately have got 10,000 sticks of timber from one point with which to construct their docks.

Mr. DAVIS. Piles?

The WITNESS. Yes, sir; piles and other timber. We are just making up our statistics for the last fiscal year, and I am sorry I did not bring them. I had a synopsis of the business. I recollect, however, 33,000,000 feet of lumber as one article. In former years we had about 2,000,000. The lumber trade has increased prodigiously, whereas the agriculture

has fallen off. There is not one-tenth, or about one-tenth of the agriculture that there was before the war. We had about 2,000,000 bushels of grain and now we have only about 300,000. All the agricultural products have fallen off with the exception of cotton. That has increased very much.

Q. How long has your canal been in existence?

A. It was opened for navigation in 1860, but not completed. It has only recently been completed to its present dimensions—within a few years.

Q. You say dimensions—what do you mean by dimensions?

A. The original canal was cut by steam. It was the first canal that we have any knowledge of being cut entirely by steam-power, and where the steam-power was found insufficient we resorted to powder and exploded it under water. We had to cut through these enormous cypresses, and it was very difficult of excavation. They were blown out. The canal was only thirty feet wide. Then we constructed another one parallel to that, leaving a space between them, and after constructing the two canals this center-piece had to be taken out, and, of course, we had the use of the two lines while we were removing the center-piece. The two canals were thirty feet wide each, and the space between was about ten feet, I suppose, making sixty-five to seventy feet on the surface.

Q. At what speed do you go with your steamboats, and what effect does it have on the banks?

A. The speed of the steamboats on the canal depends entirely upon the relative size of the boats. A smaller boat makes a greater speed; they run from about four miles an hour up to eight or nine, according to the relative size of the boat. Long and narrow boats make greater speed than very wide boats. The effect upon the banks of the canal, which is probably one of the most important points which the canal was designed to test, we not having any tow-path, and it being an alluvial deposit, the banks of the canal have grown up with a very heavy growth of briars and shrubbery, trees, reeds, and everything that protects the banks from the wash of passing boats. Occasionally, where there is nothing but pure white sand, we have had some little difficulty. There are one or two places that have troubled us a little. In that case the canal had to be widened. We made it a hundred feet and gave greater slope; but we think that could be removed by putting in something that would grow, or paving it up. That sand, of course, requires a great deal of slope. It is very fine sand.

By Mr. CONKLING:

Q. You mean not coarse, gritty sand, but more like pulverized sand?

A. Yes, sir.

By Mr. NORWOOD:

Q. Something of a quicksand?

A. Yes, sir; something of that kind.

Q. Sharp sand has great power of resistance as a bank—much more than clay.

A. I understand that.

Q. I notice one of your canals extends between what is called Corn Jack and Albemarle. I then see a connection between Currituck and Albemarle Sound. Why was it that it was necessary to cut that canal when there is a water connection?

A. The object of that cut was to avoid the lower portion of Currituck Sound, which is very shallow. The object of that canal is, we save distance in getting to Albemarle Sound and get rid of this shallow water.

We found it less expensive to cut a canal through there than we would to deepen those natural waters, and hence we made the cut, to get into a fine navigable river.

Q. Have you examined the coast-line down as far as Georgia or Florida?

A. I have not, sir. I have never been down myself with boats. I have sent them down there.

Q. Can you state how many miles of canalling it will be necessary to make in order to have a connected inland water communication from the Chesapeake Bay to the coast of Florida?

A. No, I could not state with any accuracy. The present map will show the rivers that could be united; but these inland waters would require improving. For instance, take the sound that comes from Pamlico Sound to Beaufort, there are portions that would require some improvement. I have passed through it with six feet of water. Then from Beaufort south there is not an average of perhaps four feet. That would require improvement to get a boat of any great draught. Still, some boats of light draught now pass through going south. We have built boats upon the Ohio River plan at Norfolk, and sent them to Augusta, Ga. They pass down through that navigation, and after getting to Beaufort they of course would have to wait for a favorable opportunity to go outside. They go down and go into New River Inlet and get clear of Cape Fear; so that the boats, instead of going on the Atlantic all around the dangerous coast of North Carolina, escape that, Cape Hatteras, Lookout, and Cape Fear, by this inland navigation, and there is no point, I think, more than two hours' run for a boat of light draught to a harbor when they go on the ocean outside. They are within easy distance of a secure harbor for boats of a very light draught now. But from what I learn from persons who have examined it it would not be a very long cut from the Cape Fear River or Waccomow to Georgetown, S. C., and thence there is an inland passage, I think, all the way south. The report of last year is now in press. I think this gives an account of some fifty-eight steamers running on the canal, the number of passages each boat has made, &c., and the other table presents the quantity of produce carried through; and we have also a report of Mr. MacAlpine, a former engineer of the State of New York, in regard to the capacity of the canal for the traffic. He estimates the capacity of the canal at 39,000,000 of tons. They have great capacity and not much business.

Q. Do you ever tow the Erie Canal boats on the Chesapeake?

A. We have, sir; we have brought boats from Buffalo.

Q. Do you find any difficulty at all in towing them on the Chesapeake Bay?

A. Not at all. It is demonstrated that there would be no danger whatever in towing on the Chesapeake Bay. The harbors are ten or fifteen miles apart, of easy access. We sent 40,000 sticks of timber and I think we have only lost two sticks where they have been properly rafted, and it is contemplated now, and we are sending every day barges from North Carolina to Baltimore and Philadelphia. Not a very great number, because it is a new traffic lately opened and we have had business enough to engage us. I have passed from North Carolina to New York to Lake Ontario in a steamboat thirty years ago. So that we have had quite a long time to improve. Thirty years ago there was a boat built at the navy-yard trying a new mode of propulsion, the wheels working horizontally. As it did not make any swell it was supposed to be a good thing for canal navigation, and at the request of the Secretary of the Navy we made an experimental voyage to the North.

I had charge of the steamer. We went to the different navy stations at Philadelphia and New York, thence to Albany, and thence to Lake Ontario. It was found, though, that the mode of propulsion was not good for canals. While it did not make any swell yet the wheel was placed in a very objectional part of the boat, right at the bilge, and would come in contact with the sides of the canal and get pieces of gravel in and stop it. We found nothing better in our mode of propelling than the ordinary screw, though in our canal we use all the modes that are known. We have both side-wheel, stern-wheel, and propellers; wheels in the bow and wheels in the stern. We have tried every kind of invention, but none of them yet have obtained the same results as the ordinary screw, the plain screw. This is the universal plan now that is adopted. This screw takes up a very small portion of the boat. [The witness here explains a sectional view of boat.] This plan was gotten up to illustrate steam on canals, and I will state that if the James River and Kanawha was enlarged, boats of that description could unload anywhere on the western waters and go to Richmond, Norfolk, Baltimore, Philadelphia, and New York without any transshipment and with perfect safety, for boats of that description are running every day on Chesapeake Bay.

Q. Did you mention the length and beam of that boat?

A. The plan of the boat is 200 feet length, $23\frac{1}{2}$ wide. One of the most remarkable things in regard to the work was this, that it was commenced to supersede a work owned by the government of the State, and it was built almost without any means to start with, finding means as they went along. Persons came forward and subscribed and built this work, which is now capable of passing the largest boats on the coast in this eastern part of the country. Its capacities are too extensive yet for the country until it gets filled up. We are now building other canals to shorten the route south.

General J. D. IMBODEN:

Mr. Chairman, in reference to the coal and iron of the Virginias, particularly along this line, perhaps it will be best to commence at Richmond and follow up the canal, and state what the deposits are, prefacing it with the remark that for several years I have made these minerals a subject of pretty close investigation and study, especially in Virginia.

After passing out of the coal-fields near Richmond, with which you are of course familiar, and getting out of the granitic region—

The CHAIRMAN. Tell us a little about the coal-fields about Richmond.

General IMBODEN. You come upon the coal-fields about ten miles above this city, on the canal. The field is some five or six miles in width, and extends from near Petersburg, crossing the James some ten miles above this, and is about 30 miles in length. It is in outline an irregular ellipse, and remarkable in one respect—anomalous, in fact, in mineralogy and geology. The coal is found resting here on the granite, an unknown circumstance, I believe, in carboniferous formations anywhere else, perhaps, in the world. This is one of the oldest known coals. I believe the received opinion now is that this Richmond coal-field is the crater of an extinct volcano in the granitic formation, and that the coal was formed elsewhere, and drifted there, and deposited in pockets among the peaks and ridges of the granite found running in every direction through the field. In mining, if you hit one of these deep pockets, you may find a deposit of fine coal 40 feet in thickness; if you miss the pocket you may come on the granite, where the coal is very thin, and

where it seems to have been stretched like a pair of saddle-bags across the intervening ridge or peak of granite that penetrates it.

The field, too, presents another anomaly. There is found a natural coke in one portion of the coal-field here, produced by the injection into the carboniferous formation, in a hot and liquid state, of porphyry and other matter that now forms faults, troubles, and dikes. It is a very good coke, and brought here for sale, about as good as that formed in the coking-ovens from coal.

By Mr. NORWOOD :

Question. What kind of coal is that ?

Answer. Bituminous, not suitable for iron-smelting without being coked, for there is a good deal of sulphur in it. It has been sent off for a long time to the cities of the North both for fuel and as a gas coal, and ranks high.

By Mr. CONKLING :

Q. Is it at all like the cannel coal ?

A. No, sir ; nor so rich in gas.

Q. Like the Cumberland coal ?

A. Yes, sir ; somewhat. I should say that the coal of the Richmond field is more like the Nova Scotia or Cape Breton coals than any other with which I am at all acquainted.

By Mr. DAVIS :

Q. Is it found above or below the water level ?

A. It is generally below. The Dover mines, seventeen miles above here, are several hundred feet below the bed of the river, and the galleries run under the river. You have to shaft. I was two weeks ago at Clover Hill, in Chesterfield County, twenty-seven miles from Richmond, where they are hoisting coal up a perpendicular shaft of 900 feet to the surface with an incline of 300 feet rise from the coal-bed ; they are working to the foot of the shaft. They are much troubled with water at that point. The coal, however, is among the best in the whole field. These Richmond coal mines were known and worked before the revolutionary war, and are the oldest ever worked in this country.

By Mr. NORWOOD :

Q. Is this quarry of granite they are working out here a part of that ?

A. The same formation precisely. The granite formation of Virginia is an interesting one in one respect. There is a line that forms the falls of our rivers running almost exactly due north and south, and extending from Weldon, N. C., to Georgetown, D. C. You have there the falls of the Potomac ; extending that line south, at Fredericksburgh you have the falls of the Rappahannock ; here the falls of the James ; at Petersburg the Appomattox, and at Weldon the Roanoke. These falls are caused by the upheaval of the granite on this north and south line. East of that line, from here to the sea, occurs a tertiary formation. There are no minerals or rocks found from here to the coast. It is all a huge drift of sand, clay, and shell. You find large deposits of shell-marl in the peninsula below us here 10 to 20 feet in thickness. But there are no economic minerals east of this city or east of that line anywhere, with the exception, occasionally, of a small drift of bog-ore, or something of that sort.

In the glacial period there have been some iron ores drifted in and dropped in small quantities in some of the counties below here, but nothing worth working has been found.

Passing from the coal mines along up James River, you come into an

entirely different formation, the metamorphic overlying the plutonic, and on the western edge of which you first encounter the Pottsdam sandstone in the Blue Ridge Mountains. You find immense deposits of good hematite, specular, and magnetic iron ores all through this metamorphic region. In Albemarle, Nelson, and Amherst, and across the river in Buckingham and Appomattox, there are very large seams of iron, practically inexhaustible. They are working some of those ores now at the largest furnaces in the State, seven miles above the city, and making very excellent iron. The best of these ores, I would say, average about fifty-six per cent. of metallic-iron. They are found along the side of the canal at many places. Two mines that they are now working are perhaps not over a mile and a quarter from the canal. The ore is run down by a tram to the boats.

West of the Pottsdam sandstone out-crop in the Blue Ridge, you come into the purely hematite formations of iron ore, as rich, perhaps, as any in the world. These are in the Blue Ridge and west of it.

The great hematite formation extends from New Jersey through Pennsylvania and Maryland into Virginia, and along with the Blue Ridge range on into Tennessee, Georgia, and Alabama. These ores are, however, chiefly on the west side of the Blue Ridge, and are found parallel with the mountains, and cropping out almost everywhere. It is literally true that you may strike the western base and side of the Blue Ridge anywhere and find iron; not always in workable quantity, but in immense deposits in certain localities, all the way from Harper's Ferry to the Tennessee line, and as I have said as far as Alabama. There exists a line of old charcoal furnaces that were worked for a long time in the valleys west of the Blue Ridge, many of which have been allowed to go out of blast from the exhaustion of the fuel along the line, but they are now being renewed. The Chesapeake and Ohio Road is giving new life to them by bringing this splint coal of the Kanawha within their reach. The Pennsylvania Central Road is running a branch known as the Shenandoah Valley Railroad, up as far as Staunton, for the purpose mainly of reaching the iron-ores of which I speak. They are not confined to the Blue Ridge, but lie in the valley and mountains west of it. The canal terminates at present at Buchanan, where there is a very rich iron interest, one of the richest that has been opened to development in Virginia, and from Buchanan up to the foot of the Alleghanies, following the valley of the James and Jackson rivers, there are not five consecutive miles along this water-line where you do not find immense seams of rich hematite-ore throughout that entire region. The finest flux perhaps in the world is found in the silurian limestones of the valley west of the Blue Ridge, after you pass Balcony Falls, where the North River of Rockbridge County and the James come together. You there enter the great limestone formation of the Shenandoah Valley, the same that forms the Cumberland Valley, and, running through Pennsylvania, extends into New York; and southward runs down into Alabama. After passing the Alleghanies, on the line of this improvement, there are no minerals of much value until you get down to the coal region, except the limestones found again in Greenbrier County. Along the Greenbrier River there is some very fine limestone for fluxing and building purposes. It belongs to the Carboniferous series, and is rich in carbonate of lime.

The first point at which coal is reached is in the Sewell Mountain, below the mouth of Greenbrier or New River some distance, where you strike the lower series of the great Alleghany coal-field. The upper seam of that series is probably 1,200 feet below the water level of the Kanawha River as low down as Charleston, and when you get to the

Ohio River it is too deep ever to be worked, being, perhaps, over 2,000 feet under the surface of the Ohio. That lower series is a formation that has some seams of very excellent coking, bituminous coal, rich in carbon, but too friable and too tender a coal. I examined a specimen of it within the last fortnight in company with probably the most eminent living mineralogist in the world—Professor Ansted, of England, for a long time president of the Royal Geological Society, who is now in the Kanawha Valley, and from whence I have just returned. The coal of that series probably will not bear transportation, certainly not by rail and possibly to no very great extent by water in its raw natural state. It crumbles, but is a very rich coal, and when coked is an exceedingly valuable fuel for iron-smelting. They are about to use it in a large new furnace on the line of the Chesapeake and Ohio Road at Quinamonte, and there is no question but it will make a most capital fuel and be exceedingly valuable.

Beyond that you come first to what is generally understood by "the Great Alleghany Coal Field," upper series with an intervening sandstone dividing it from the lower, of perhaps 1,200 feet in thickness. About nine miles above the mouth of the Gauley at Hawk's Nest, appears the eastern outcrop of this series, where you have fourteen veins presented in their average thickness. You go down to the Gauley and fairly enter the cannel formation, which extends from Coal River in the southwest, to and up the Gauley River in a northeasterly direction, about sixty miles to a point in or near the edge of Webster County, between the Elk and Gauley Rivers. The belt is about twenty miles wide in which the cannel coal is found and about sixty miles long. It is a curious formation, inasmuch as the cannel does not exist everywhere through this entire district of sixty miles in length and twenty in width, but is found here and there; and much thicker in some places than in others. About Peytona, on Coal River, and at Boone Court-House, on Little Coal, it is found in almost its maximum thickness. You find it thinner but in very good workable thickness at Cannelton, on the Kanawha, where they are working the mines now, and shipping their coal by the Chesapeake and Ohio Road. I think, and that is I believe the opinion of Professor Ansted and others who have investigated the subject, that its maximum thickness is now ascertained to be up the Gauley River and its tributaries, commencing six miles from the mouth of the Gauley, and extending across to Elk River.

Q. Name that maximum, if you please.

A. In seams opened there within the last four or five months the thickness of the cannel seam I am acquainted with is a little over five feet. That is found imbedded with other coal in a seam about thirteen feet thick, the seam containing splint, bituminous, and cannel. The cannel, however, is about five feet in thickness. That is on a tract of over 40,000 acres on the Little Elk, a tributary of the Gauley, nine miles above its mouth, and lying between the Gauley and Elk rivers.

By Mr. DAVIS:

Q. What is the position of the cannel seam?

A. It is a little more than half way between the bottom and the top of the entire seam. There is a little bituminous coal, then a parting of slate of five or six inches that frequently occurs in all these coals; then you will have splint coal, perhaps, three feet; then the cannel comes in, and then above that will be splint or bituminous, eighteen, twenty, or twenty-four inches.

Q. Is it level and regular in the mountain?

A. No, sir; the uniform dip of that upper coal series is about a hundred

feet to the mile to the northwest. That dip is almost absolutely uniform. There has been no violent geological disturbance there at any time, but in the gradual upheaval that occurred there was a little tilt given to it, but with the exception of a trifling bending down at the sides of the mountains and which you pass in going in twenty or thirty feet, the dip is almost perfectly uniform all through the district of country I speak of.

Q. Does it drain towards the river?

A. Yes, sir; the whole country is cut with very deep ravines, as you will find when you pass through it. The highest mountains on the Gauley are about 1,600 feet above the water level, and in the highest mountains the cannel coal is found in its greatest perfection. The upper member of the Carboniferous series there is a peculiar black flint ledge, which pervades the whole region, and under that is found this cannel coal in its greatest perfection, near the summit of the mountains. Where the mountains are low, as they are on the Kanawha River, below Cannelton, the cannel coal disappears. The line of the cannel belt I speak of, from Gauley River crosses the Kanawha River a few miles east of Charleston. There is no cannel very near Charleston or beyond and west of it down the river at all.

I believe that the only adequate means of fully developing the enormous splint and cannel coal interests that lie in the counties of Fayette, Nicholas, and Clay, between the Elk and Gauley, will be by the construction of this water-line. When you have once improved the navigation on the Kanawha up to the mouth of the Gauley, two dams in that river, of fifteen feet each, will give slack-water navigation for very large barges up the Gauley as far as the mouth of Twenty Mile Creek and of Little Elk, tributaries of the Gauley, and thus open up an immense field of the best cannel and splint coals in that whole region. The improvement of Elk River, too, will do the same thing for the other side of the mountain, which is very high there.

There is another point of view in which this water-line must have a most important bearing upon the development of the resources of that country. Passing the mouth of the Greenbrier and going up New River in the direction of the great valley of Virginia and the southwest, we strike the great iron formation in Giles, Bland, Mercer, Floyd, Montgomery, and Pulaski Counties, and there come upon a class of ores almost identical with those of Lake Superior, in Marquette County, Wisconsin. There is scarcely, by analysis, any difference between them in their constituent elements, and to the eye there is scarcely any appreciable difference. I have now in my possession here, received within the last few days, a specimen of magnetic ore from a large vein said to have been found in Montgomery County, convenient to New River, that is so strongly magnetized that if you drop it in a keg of shingle-nails, it will lift a dozen or two of them out. They will hang to it, so rich is it in magnetized metallic iron. The improvement of this water-line up to the mouth of the New River, where it and the Greenbrier come together, must bring the coal of the Kanawha Valley and these rich ores together more nearly than they can be possibly brought by any other system of improvement. It is now, by iron men, demonstrated that you can bring together upon this line, by railway transportation, the materials to make a ton of iron at a cost, including the labor of making the iron, of eighteen dollars per ton, whilst at Allentown, Pa., and other points, and in New York, it costs them twenty-eight and a half to thirty dollars for the materials and the labor to produce a ton of pig-metal. There is a difference of about ten dollars in the

cost of producing a ton of pig-metal on this line and in the iron-producing States north of us.

Q. Which makes a difference of about 33½ per cent. ?

A. Yes, sir ; I think it is now demonstrable that iron can be made as cheaply upon this line as it can be made in Wales, if this water-line is constructed.

I spent some time—six months—this year in England, and looked into the cost of iron-manufacturing there with a good deal of interest, and found the coal question was one of great concern to them. I believe now the universal conviction in England is that the only protection they have against a continuance of excessive prices in coal is in opening up these West Virginia fields by water communication with the Atlantic, so that coals may be sent into England from West Virginia. That we shall ere long send coals to England and keep down their prices I have no doubt. Their coals went up to fifty-four shillings a ton while I was there, and they are now ruling at nearly forty shillings. At that price, even with reasonable railway-freights upon them, we can send these coals to England, and if we can bring them here by water at half the present cost of railway transportation, as the canal will enable us to do, we will not only be able to supply all the Atlantic naval stations south of this, even as far as Rio Janeiro, with coal from these West Virginia mines, but we can then literally “send coals to Newcastle,” and undersell English miners who have to lift from a depth of sometimes nearly 3,200 feet by machinery.

Q. Is the coal formation on the Kanawha and the Big Sandy the same ?

A. Yes, sir ; it is the same formation. It is the same “field” precisely and substantially the same formation. That field extends as far down as Alabama, where it is finally lost on the Black Warrior River. The character of the coal undergoes changes, however, in different localities.

By Mr. NORWOOD :

Q. What is the average depth of this coal-bed below the surface ?

A. It is impossible to say that, as it depends on the height of the overlying mountains.

Q. I mean the cannel-bed that you have described ?

A. That is far above the water-level. The height of the seam varies with the locality ; at Cannelton they are working a seam near the top of the mountain.

Q. I am not speaking of the water-level ; I ask you how far below the surface of the earth ?

A. That depends on the slope of the mountain. The coal is in nearly horizontal strata, and if you go to the summit of the mountain, or overlying ridge, it is much farther down to the coal than it would be down anywhere on the mountain-side. It crops out at the side of the mountains. You can find coal by shoveling away the earth over the outcrop at the depth of two or three feet, usually.

Q. I understand that these coals appear on the side of the mountain, then ?

A. Yes, sir ; the coal runs nearly horizontally through the mountain. For instance, you will find a seam of coal on one side of the mountain ; then take your barometer and go over the mountain and get the same elevation on the other side, allowing for the dip, and you find the same seam on the other side of the mountain, and thus clearly running through it.

The distance from the top of the mountain to one seam may be a hundred feet ; to the next, 200 or 300, and so on ; the whole thickness of the coal upper measures is about 950 feet ; that is, from the lower seam of

the upper series to the topmost seam is about 950 feet. That is the thickness of what is called the upper series of the great Alleghany coal formation. There are fourteen known seams in that 950 feet that we call workable seams, of an aggregate thickness of 70 feet, capable of turning out 105,000 tons to the acre, where you find them in their maximum thickness. The whole Kanawha district is estimated to contain upon an average about 46,000 tons to the acre, taking the indifferent lands with the best, but the best of the land will turn out 105,000 tons to the acre, as Professor Ansted's measurements within the last fortnight have demonstrated.

By Mr. DAVIS:

Q. What would you consider the breadth and length of that coal-basin?

A. As I stated a while ago, the cannel-coal basin is sixty miles in length, and twenty wide.

Q. But the whole coal-basin?

A. There are 55,000 square miles in the entire field, 16,000 in West Virginia. The great Alleghany coal-field contains 55,000 square miles, and runs through or enters eleven States.

Q. I did not ask for the whole coal-field. I said that belonging to this particular valley.

A. I should say that there would be tributary to this work, or to this and the Chesapeake and Ohio Road, not less than 2,000 square miles of coal-bearing lands. I take into that estimate the Gauley and the Elk and Coal Rivers and their tributaries.

Q. But not the Big Sandy?

A. No, sir; I do not bring the Big Sandy in. You observe, the ascertained extent of the cannel-coal field there is 1,200 square miles from Coal River up to the edge of Webster. Outside of that, all these New River coals come in that I have just mentioned, and which you will find described so fully in Mr. Ridgeway's pamphlet. They are outside of the 1,200 miles I have spoken of as containing the cannel. If you take the iron found in Giles and Mercer, and the other contiguous counties named, the coal and iron will not be more than seventy or eighty miles apart; the coal of this basin would reach irons found up there. There is iron in this coal-field of which I spoke, but it is not rich enough to work by itself, though perhaps useful to mix with richer ores found east of it.

Adjourned.

CHARLESTOWN, WEST VIRGINIA,
Friday, October 24, 1873.

The committee met at 5 p. m.

Examination of Professor DAVID T. ANSTED.

By the CHAIRMAN:

Question. Will you be kind enough to state to the committee what has been your occupation and business for the last few years?

Answer. I have been occupied in practicing engineering as connected with geology for the last twenty-eight years. I have been accustomed to visit different coal-fields, and iron-fields especially, in all parts of Europe I may say, and in some parts of Asia and America. I have seen most of the important coal and iron fields in the world.

Q. State the result of your observations on this proposed water-line from here to Richmond as to its mineral wealth.

A. I find on the line of this proposed communication one of the most remarkable iron-fields that exists in any part of the world as at present known. It contains every variety of the most valuable ores, and these

ores are distributed in such a manner as to be more accessible than, I think, in any other districts.

These ores extend over a wide range of country, ranging from east to west, intersected nearly at right angles by the railroad. They include the most valuable of all the known iron ores—magnetic oxide. They include a very large quantity of the red hematites, a very large quantity of the peculiar ore known here as the fossil-ore, which is exceedingly valuable for iron-making; a very large quantity of brown hematite, and I believe other ores, which I have not, however, seen in very great abundance. But those are quite sufficient to justify what I have said with regard to the value of the district for iron production.

Q. Please give us a general idea of the location of that district.

A. These iron ores exist in a belt beginning, I believe, about the position of Charlottesville, or perhaps a little to the east of that, on the line, and they terminate, so far as I know, a little on the western side of Staunton. Within that belt they occur, and crossing the rail nearly at right angles, at intervals, certain groups of the ores being found on the eastern side of the Blue Ridge, and others between the Blue Ridge and the Alleghanies. That is the condition of the country with regard to iron as at present known.

With regard to coal, the most important of the American coal-fields crosses the line of the railway, the railway intersecting it nearly at right angles, the lowest part of the coal coming in a little to the west of the Alleghanies, the best part of the coal between about Hawk's Nest, or a little on the east of that, and where we now are, and throughout the whole of this belt the coal exists under circumstances the most favorable.

There are, I think, about twenty distinctly workable seams in coal in the middle of the district, or what I regard as the middle of the whole series of the coal-bearing beds. These middle beds are workable, all of them, above the water-line. They lie almost horizontally, and are capable of being worked at a cheaper rate than any coals which exist on a large scale in any part of Europe. They include bends of coal of various thickness, none extremely thick, but all thick enough to be worked in the most effective manner without any waste.

They are capable of being reached by very simple processes and carried down into the route of the rail where the river intersects them into valleys which are more or less accessible conveniently by tram-roads from the rail. Of course, that would be on the side on which the railway lies. On the other side of the river they are also accessible, and might be, as they are in the neighborhood of this place, carried across the river by a ferry. There is no practical difficulty in that. There is no reason whatever why the coal throughout the whole of this district should not be obtained at a cheaper rate than it is now being got in any of the mines in Europe, and I believe I may say in any of the mines of America. There is practically no difficulty whatever; there is no water—no power required to lift anything. All that has to be done is to lay the coal open in a proper manner, let the coal be brought out and be put upon the cars for the market.

The quantity that could be mined is very large indeed. The main valley of the Kanawha is a deep cut in the great deposit of the carboniferous beds, and this great cut is intersected at intervals by cross-cuts, which afterward, almost without exception, become more or less parallel with the main line of the valley. In that way the coal is cut out into blocks of convenient size, accessible generally from two or three sides, and that facilitates the getting to a very unusual extent.

In a rough way, I can say that the average quantity of coal which

would be obtained on every acre of these coal-lands would be about fifty thousand tons. That would be the quantity of coal which might be expected to be got, deducting a percentage for waste and accident and what are called courses in the coal, for unprofitable parts. Forty thousand tons per acre would not be at all an unreasonable estimate.

The total acreage within range of the Kanawha River I cannot estimate from memory. I could tell by looking at a reasonable map of the country, and it could be easily determined. I cannot give it exactly. I dare say some person knowing the district better would be able to inform you upon that point, but it would be very easy to show that the quantity of available coal in the district is so very large that practically for a thousand years to come it may be regarded as unlimited.

The quantity of coal that will be required in America within a comparatively short time must amount, of course, to millions of tons per annum. I believe at present the quantity is somewhere about twenty millions. In England we are now mining about a hundred and twenty millions of tons per annum, and the manufacturing of iron would increase the consumption of coal very largely, indeed, directly by the coal that would be required to make the iron, and indirectly by the large quantity of coal required for the manufactures which would be brought into use by the introduction of iron on a larger scale.

There can be no doubt whatever that the general coal-fields west of the Alleghanies will have to supply all the manufacturing parts of America before very long.

I do not mean to limit to the Kanawha River, but the western coal-field of the Alleghanies is the great coal-field of America, and the Kanawha gives, I may say, the very best means of access to the coal-field as it exists.

It is also accessible to the South, and has been used to a great extent in the North, but the Kanawha is far better situated for working the coal than any of the places in the North, and, I believe, than any of those to the South.

Up to the last year there were practically no means of escape for this coal either east or west. Eastward it was cut off entirely by the inaccessible roads across the mountains.

Westward, the only chance of conveyance was the Kanawha River. The Kanawha River is capable, beyond all doubt, of being made navigable, and that at comparatively small expense, but at present the navigation is interrupted by numerous shoals, and even when the Ohio is reached the shoals are so troublesome that, for two months in the year, I believe, there is no certainty of getting coal to market. Now, coal is a thing that will not bear interruption. It has to be got regularly. A certain staff of miners has to be kept constantly working. There is no means of accumulating coal on the ground; it must be sent off, and if it cannot be done regularly and steadily, the supply will be limited to the quantity which can be so sent off regularly. It is nearly impossible to continue mining coal on a large scale without a regular market, and a regular and certain means of getting to market. For that reason good means of communication has been and must continue to be looked for. Now that the railway has been constructed, the iron can be brought to the coal, where it is desirable, and the coal can be carried to the iron, and by means of the railway, if the rates are such as to make it satisfactory, there is no doubt that a vast development will take place. But the railways cannot certainly carry the quantity of coal that is required, and the quantity of iron that will be required to communicate between the East and the West. It will be absolutely necessary that there should be other means of conveyance, and of all the means of convey-

ance for raw material, or minerals, such as coal and iron ore, nothing can equal water. It must be very much the cheapest, and with a continuous water communication it is absolutely certain. Therefore, for these reasons, the canal communication from East to West seems to me to be an absolute necessity for this district.

I cannot suppose that the coal-field can be properly developed, or that the iron-field can be properly opened and worked, without such water communication being completed. I have looked at the statements which have been made with regard to the line of the canal, and from what I know of the country and of the rivers, the James River, as it exists, the Kanawha as it exists, and the Ohio as it exists, and the possibilities of getting through the mountains, it appears to me that there is nothing which ought to interfere with the formation of a continuous line of water communication from East to West. The evidence that has been given on the subject by Mr. Ellett would be sufficient, in any country where engineering is known, to satisfy any one upon that point. Mr. Ellett's name is so well known all through the engineering world that his opinion upon a subject of that sort is almost sufficient.

But, there is not only his evidence, but the evidence of a number of other able engineers who have evidently gone into the matter very carefully, and who have satisfied themselves that the communication is not only possible, but economically possible.

With regard to the quantity of minerals which would have to be carried over such lines of water communication, I can safely say, from my knowledge of the subject in various ways, that it would be, alone, sufficient to justify the construction of the canal, at the cost at which it has been placed.

Q. What have you to say as to the conditions for economical mining of the iron ores?

A. With regard to the mining of the iron ores, that can be done at a cost below the price of mining similar ores in any part of the world which I have ever visited. The ridges of iron ore stand up out of the ground in the eastern part of Virginia just as this paper [indicating] lies above the table, and they form hills. They have, in fact, kept up hills while the country around has been removed, and all that has to be done is to run a tunnel into the hill-side, tap the lode as it comes down, and remove it from below, and bring it down. The quantity of ore that exists in that way, which I have seen, is very large indeed, and the quantity that exists in different parts of the country, which I have not seen, I have every reason to suppose is enormously larger. The mining for iron in that district could be done at the very smallest possible cost. It has the greatest advantages of position, and there is no difficulty whatever in moving it and carrying to the nearest railway or river.

By Mr. DAVIS :

Q. How would the cost in this region compare with the cost of the manufacturing of iron abroad?

A. The cost of the manufacturing of the best qualities of iron which ought to be made from ores of such very high values would not be much more than one-half at the present prices of labor here. The actual cost of making Bessemer steel, for instance, would be considered below half the cost in any part of England at the present time.

Q. You spoke of forty or fifty thousand tons of coal per acre; was that above or below water-level?

A. Above.

Q. How does that compare in quantity as well as quality with the English coal?

A. There are no workable coal-fields of the ordinary kind in which that could be done without going to a very much greater depth than here, and the total thickness of seams in the English coal-fields in any one district is not so great as it is here.

In England the beds are very much inclined, and though there are more workable seams throughout the coal-field than here, they do not exist in the same locality, and they could not be mined in the same place. More coal could be mined here from an acre of land than, I think, in any coal-field that I can remember in England.

There are some cases in France and some elsewhere of exceedingly thick beds, but they are always local; not more than a few square miles at the most. Here the extent of the coal-field involves a great many thousand square miles.

Q. How is it as to quality?

A. The quality of the coal is quite unexceptionable. There are three kinds. The kind which is called bituminous is remarkably free from any troublesome ash. It has a certain quantity of ash, and perhaps a little more than the most of the English coals, but it is capable of being coked, I am quite sure. I have not seen it made, but am informed it has been, and have no reason to doubt it. In fact, I am quite satisfied from the quality of the coal that it must make a very good coke. There is a large quantity of that. That is the largest quantity. It is a tender coal, which would make it desirable that it could be coked.

Besides that, there are seams of splint-coal, a hard coal, very valuable for household purposes, and valuable also in the manufacture of iron, because it is so singularly free from all those things which are injurious in the making of iron. It is a coal, I believe I may say, that is used at this moment in furnaces in Eastern Virginia which have been erected for charcoal-iron, and it has been used to replace the charcoal, and the iron made from it has been found just as good as the iron made with charcoal before. It is a perfectly good coal, used in the furnaces raw for the making of the best qualities of pig-iron.

There is another, called cannel-coal, which is exceedingly valuable. The quantity of that coal is uncertain, because it is a coal which passes from cannel into another state, of splint, perhaps, in the same bed. It is not continuous, but is found in large quantities in thick beds, and is the most valuable of coal for making gas. It is sent to all large towns, and I have no doubt that ultimately the great consumption of it will be in the large cities for the manufacture of gas. It has a very high gas-producing power—a very high illuminating power.

Q. How does it compare with the Albert?

A. The Albert is hardly to be called a coal. It is a mineral which consists almost entirely of bitumen in a peculiar state. The value of the Albert is more for enriching than producing, perhaps. It enriches coal-gas very much indeed. The quantity of Albert is exceedingly uncertain. It is difficult to get it. It is only mined in one or two localities in Canada. I do not think it can ever come into the market in sufficient quantities to supply the great gas-furnaces throughout the country. Nothing can interfere with the consumption of cannel on a large scale.

Q. How does it compare with your best English coals for gas?

A. It is quite equal, and I should think the better qualities of it are superior to our qualities of coal, say the Wigan cannel, which has always been regarded as the most useful and available of the cannel-coals which have been exported. There is one coal, which is hardly a coal either, found in Scotland, called the Bog Head, a sort of shale, containing an

enormous quantity of gas, which yields, perhaps, a thousand cubic feet of gas per ton more than any other cannel known. That is the only exception. This would compete, I think, with the Wigan coal, which has been used generally, I think, in New York and in large cities on the coast.

Q. I understood you that it ought to be produced and got to the seashore as cheap as any English coal on board at England?

A. It certainly could be transported to any place on the eastern coast on terms much more favorable than any English coal at the present time. There is no doubt whatever about that. The cost of getting the coal, as it has been found by experience by the companies who have sold coal, is, in my opinion, a great deal too high. It has cost a great deal more than it ought to cost. I do not at all see why this coal should not be produced upon much easier terms, and put into the cars at a very much lower rate, than it has ever yet been. No coal-cutting machinery has ever been used. The whole of the coal is not used. There is a great deal of waste. Nothing has been done to utilize the small coal. Altogether there has been a very considerable extravagance in the mining and working of it.

Q. What is the cost on the cars here now?

A. Mr. Edwards can tell you that better than I can. It is from his mine, I think, that the principal quantity has been sent, and perhaps it would be better that I should refer it to him. I should only, perhaps, tell you his figures.

By Mr. CONKLING :

Q. Whence comes the name cannel, as applied to coal?

A. That is not altogether agreed upon. Some people think it is derived from candle, because if you take a piece of cannel-coal in your hand and put it to a light it will flame and burn like a torch. Others suppose that some local name has been the origin.

Q. It is applied to Scotch coal, English coal, American coal, and any other coal that resembles it?

A. Yes, sir; it is applied to a different quality of coal. It has a very different surface from any other. It does not soil the hands, and has a totally different appearance. It is a very tough coal when it is broken, and it very often has a dull glimmer, which is quite unlike that of ordinary coal. No one can mistake it.

Q. Is the water-line the best line of these coal-beds?

A. O, no. In some places there is no doubt the coal will have to be worked ultimately below the surface, but, generally speaking, along this valley a large proportion of the coal could be got from the water-line. I do not think it would make much difference, even if it had to be sunk for, but, practically, for a very long time to come it will not be necessary to think of sinking for these coals. Where we now are the principal coals would, no doubt, be got by sinking. But a very little way up the stream, and for a long distance northeast and southwest, the coal would be got in hills and hill-sides.

By Mr. NORWOOD :

Q. You gave the geographical location of that iron-bed. You state it extended where?

A. It occupies the country partly between the Alleghany and the Blue Ridge on the eastern side, and partly on the eastern side of the Blue Ridge itself; on both sides of the Blue Ridge. It runs northeast and southwest.

Q. Can you state the extent of that bed in miles?

A. It runs, I think, from a hundred miles, or more, north on the Chesapeake and Ohio Railway, and it runs down south to Alabama. You know the distance in miles better than I do. It runs to the north of Alabama.

By Mr. CONKLING:

Q. That is the iron?

A. Yes, sir.

By Mr. NORWOOD:

Q. Does that iron-bed extend through Georgia?

A. Yes, sir.

Q. Continuously?

A. Yes, sir; it is continuous.

Q. At Mr. Conkling's suggestion I will ask you what is the extent of miles of this coal-bed of which you have been speaking?

A. That extends from the northern coal-fields near Cumberland, goes through the whole of Virginia, the western side of the Alleghanies, and into Tennessee, and, I think, a little below that. I cannot tell the number of miles, but the position of the coal has been marked on geological maps and can be very easily referred to.

Q. You have given the length; can you give the average width of the bed?

A. The width of the available coal I can state pretty nearly. If you will take a map and measure from McKendree's Station, on the Chesapeake and Ohio line, and run in a direct line toward the northwest, and terminating in a line running through where we are now, and run through Charlestown, parallel to the Alleghany chain, that would mark it. It runs nearly parallel to the Appalachian chain. It runs parallel to that, and extends not quite so far as the Ohio; it is but forty miles on this side of the Ohio River. Beyond that I am not aware of there being any coal of any importance. I believe there is a thin seam, but I am informed they sunk eleven hundred feet in Huntington and got none.

Q. Please state the number of strata of this coal, and, as well as ascertained, the average depth of each stratum, and the location of these strata from the surface of the nethermost one.

A. I find in the eastern part of the district, where the largest number of seams which I know of exist, that there are fourteen seams, all of them probably workable. They are not all clearly proved, but I have reason to suppose that there are fourteen workable seams.

Q. That answers the first branch of my question. The second was the average depth of each strata.

Q. I have the details here. I cannot state the exact thickness, but when I say a workable seam I mean something more than 30 inches. That would be situated 10 feet below a particular bend of silica, a bend that is found throughout this country that is known as the flint-ledge, and that is a sort of point of departure for estimating the depth of the coal. I might say that above the flint-ledge there are two, or three, or four seams, each of them workable, but not developed in that district, and not very well known. Then below the flint-ledge there come in these. I have mentioned the cannal 10 feet below. There is a bed of splint and cannal 8 feet thick and 50 feet below. I do not mean 50 feet below the 10 feet, but 50 feet below the flint-ledge. Then there is a crop of coal, probably bituminous, 140 feet below the flint-ledge. There is another crop at 160 feet. There is a mixed seam, that is a seam containing some splint, some cannal, and some bituminous, 7 feet thick of

coal, altogether 220 feet below. There is also a bend, which I am informed is splint, and I know it is coal, about 330 feet below the flint ledge. Next to that is a cannel-seam, of which I do not know the thickness, 380 feet below. Next to that there is a seam, of which I only know that it exists, 500 feet below. Below that is a bituminous coal, 7 feet thick, 650 feet below. Below that there is a four-foot seam, 675 feet below. Below that there is a seam, the quality of which I do not know, 750 feet. Below that there is another seam of 700 feet; and below that is a good seam of splint and bituminous at 870 feet; and below that is a seam 1,010 feet below the flint-ledge. Those are on the hill, just in the neighborhood of Hawk's Nest, a station on this line, being the first station at which the coal is seen on a very large scale.

By Mr. CONKLING :

Q. What is the level of the flint-ledge as compared with the river?

A. The flint-ledge is there 1,670 feet above the rail. The rail, if I remember right, is about thirty feet, or something like that, or not so much, above the ordinary run of the water in the New River, but I think at that point the river is 1,180 feet above the sea. I am not quite sure about these figures, however.

Below that, again, there are three seams of bituminous coal, all fair coal, but none of them other than bituminous coal, that are opened in some places on the eastern side, and that belong to the lower series. These others all belong to what geologists call the middle series. The other three that I mentioned, above the flint-ledge, belong to the upper series.

By Mr. NORWOOD :

Q. Do I understand you to say that, except where the mountains incline, there is a continuous layer of this coal throughout the extent, northeast and southwest, which you have mentioned?

A. Yes, sir; and very nearly horizontal. There is a little irregularity.

By Mr. SHERMAN :

Q. Do you know about the Ohio and the Pittsburgh coals?

A. The Ohio and the Pittsburgh coals belong to a different part of the coal series here. They are not far removed from this coal-field, but they are coals existing in a very different state; they are more or less anthracite, but those in Maryland, the Cumberland coals, belong to this part of the series. They form a part of the great western Appalachian coal-field.

Q. Have you been over the Ohio coal-fields?

A. Yes, sir; but not at this time. I examined them when I was here a good many years ago.

Q. Is it the same field?

A. It is part of the same field, developed in rather a different manner.

By Mr. CONKLING :

Q. What kind of coal is that lying in this grate?

A. That would be most likely the bituminous coal.

Q. Not the cannel-coal?

A. O, no; you would recognize the cannel-coal by its blaze. It would blaze up with a great amount of smoke and flame.

By Mr. NORWOOD :

Q. Are these statements made upon personal observation and examination, or upon your theoretical information as a geologist?

A. These are purely the result of personal observation. All that I

have stated to you I think I may say I know of my own personal knowledge. With regard to some of the details, as to the divisions of the coal-fields by American geologists, that, of course, is not personal, but all that I have stated as facts are statements from my own personal knowledge.

Q. The point at which I directed the question was the statements which you have made as to the existence, first of these coal-fields in these lengthened beds of the different strata which you have mentioned, and the depth of these strata, and the character of the coal.

A. Those are personal observations.

Q. Your statements, then, are founded upon personal observation?

A. Strictly.

By the CHAIRMAN:

Q. Have you found any other valuable minerals on this line?

A. Immediately in this neighborhood is a very remarkable deposit of salt, obtained from brine-springs, and that no doubt extends for some distance. I believe in almost every part of the district around for a considerable distance anything like deep borings will find brine-springs. The brine-springs are here particularly valuable in consequence of the absence of sulphates from them. They are valuable for making salt, which is used for curing purposes, and for general purposes in the West, and I believe this salt is equal to the best known in the market for those purposes. At present nothing has been done with those brine-springs but to make salt from them, and I believe a certain quantity of bromine, but they are admirably adapted for a manufacture of a different kind altogether, of what is called soda ash. There is no doubt whatever but that this would be as good a position for the manufacture of soda ash as any place could be. That has never been introduced into the United States at all, I believe, or rather has been tried and has failed in two or three places, owing to a distance from fuel, and particularly the circumstance of the deposit. That is one mineral which certainly would have a very important bearing in the future development of this district.

By Mr. NORWOOD:

Q. Did you see any marks of the valuable metals?

A. In the immediate neighborhood of the railway I do not know of the existence of any quantity of any of the valuable metals. I have seen specimens of copper, but there is no such quantity of it as would justify the expectation that there would be any important mining, nor does the geological formation indicate that anything of the kind would be probable. Coal, iron, and salt are the staple productions.

In Eastern Virginia, not very far from the railroad, comes in a remarkable series of veins containing gold; in Buckingham County and thereabouts I visited those. They have been worked. I visited them when I was in this country sixteen or seventeen years ago, and I think it is very likely they may lead to some important result. Farther south there are minerals, but they would not affect this line of communication that I know of.

By Mr. DAVIS:

Q. You spoke a moment ago of the Cumberland coal-field or the Maryland coal-field; have you ever examined that?

A. I did examine it when I was in this country before. I have not been over it this time. I know of it generally. That contains, I think, chiefly the bituminous coal.

Q. Have you examined the Valley River, or the coals in the neighborhood of Clarksburgh?

A. No, sir; I have not examined them.

CHARLESTON, October 25, 1873.

SIR: In my statement made yesterday to your committee I omitted to point out that a very important market for steam-coal for the use of steamers generally, and especially for the steam-navy of the United States, might be established at Norfolk if the West Virginia splint-coal can be carried to the Atlantic coast by canal at moderate freights. The splint-coal being unusually hard and capable of resisting exposure to weather without injury would be admirably adapted to supply the depots of the English West Indian mail-packet service at St. Thomas and those of the English fleet at Jamaica and other islands, and would certainly be preferred in the various South American ports. It would supersede everything but the very costly steam-coals of the best quality from Wales if the price would at all justify the change.

The price of the best Western Virginia coals, if they can be sent by water direct to a shipping-place on the Atlantic, would, beyond all doubt, enable the coal-owner to meet all foreign competitors in this market, and, combined with the quality, would secure a permanent demand on the largest scale. The freights proposed to be charged by the Chesapeake and Ohio Railroad, on the other hand, would altogether prevent the opening of this market.

I may add that, judging from observation, from analysis, and from reports of actual experiment, no better coal than the splint-coal in question exists in America, and certainly none can exist under circumstances more favorable for rapid and economical production.

I have the honor to be, with great respect, your faithful servant,

D. T. ANSTED.

The Hon. Senator WINDOM,

Chairman of the Senate Committee on Transportation.

Examination of Mr. WILLIAM H. EDWARDS, of Coalsburgh, West Virginia.

By the CHAIRMAN:

Question. What is your business?

Answer. I am president of the Ohio and Kanawha Coal Company, located at Coalsburg, in this county.

Q. If you have any information which you may think of value in connection with this proposed work, we should be glad to have you state it.

A. We have been engaged in mining for the last ten years, having commenced in 1864, and the greater part of that period we have been shipping coal by water to Cincinnati. For the last year and a half, since the completion of the railway, we have forwarded all our coal by rail to Huntington, and thence by water to Cincinnati. We have sent it over the rail east toward Richmond.

Q. What difficulties have you encountered heretofore in shipping your coal down the river?

A. The difficulty has been the state of navigation of this river. When we commenced in 1864 it was understood that the river was to be immediately improved, else we never should have commenced mining as we did; but up to this day the navigation has never been such from our part of the river as to make profitable mining possible. When there is plenty of water in the spring it is very easy to ship, but the last six months of the year we lose fully as much or more than we make in the first six months, so that it has been an up-hill business from the start, owing to these shoals and the long periods of low water which we have.

Q. What are the charges per ton from your place to Huntington by rail?

A. By rail the minimum price is 75 cents per ton.

Q. What is the maximum?

A. It depends altogether upon the price of coal in Cincinnati. The maximum may go on coal as high as 15 cents in Cincinnati. Generally the price of coal averages about 12 cents.

Q. You have a sliding scale of prices?

A. Yes, sir; according to the price the coal is sold at. The minimum rate is 75 cents a ton, and the maximum is as high as a dollar and nine cents.

Q. What are the rates eastward?

A. The rates east are rather higher than that. They calculate entirely by the short ton, a cent and a quarter a ton a mile. Add an eighth to that cent and a quarter and it would be very nearly a cent and a half per ton per mile to Richmond. But to points this side of Richmond it is considerably higher, and in some cases nearly double. They are extravagantly high, we think.

Q. Do you mean higher per mile?

A. Yes, sir. For instance, the rate to Richmond on a car-load, or a ten-ton car of coal is \$45; to Staunton it is \$37.20. Staunton is about half way. It is higher in proportion at every point this side of Richmond.

Q. Has there been any considerable development of these coal-fields here?

A. No, sir; not very much. There have been perhaps four or five companies mining. I suppose we have mined rather more per year than any other company. We have mined about fifty thousand tons per annum—from forty to fifty thousand tons. The trouble has been principally the difficulty of getting it away. The most of that coal is mined in the first half of the year. In the second half of the year we scarcely do one month's business.

Q. What is the price of coal at which you sell it at the mines?

A. We sell coal at the mines to all customers at 8 cents a bushel, or \$2 a short ton.

Q. What kind of coal is that?

A. We are mining splint-coal. It is a very hard coal and bears transportation very well. It is admirable coal for locomotives and for smelting iron, for grate purposes, &c. It is very free from all impurities.

Q. What do you regard as necessary in order to the full development of this great coal region?

A. Mines never will be opened here, and we never shall become a mining people unless the rates are much lower East. We come in competition at Richmond directly with Clover Hill and other coals mined in that neighborhood. They are sold at 50 cents a ton lower than we can possibly put our coal into Richmond at the present rates. If we could introduce our coal at the same rate, I have no doubt that we could supply Richmond, as our coal is superior.

Q. Why is it that so large a quantity of coal is shipped from Pittsburgh down the Ohio River, and yet you find so much difficulty in getting down there to Cincinnati from here?

A. I do not find any difficulty in getting down the Ohio when we strike it. Our company ship coal from the 1st of February up to the 1st of August, regularly. We ship coal regularly from Huntington to Cincinnati. I suppose there was not a week passed but what it was taken down. On this river it is impossible. Part of the spring there is water, but at other times we are dependent on the swell in the river, coming once a month, perhaps. We have a great advantage over Pittsburgh when we strike the Kanawha. This river has not water enough to own ship coal from any points on it.

By Mr. DAVIS:

Q. What is the relative value in Cincinnati of your coal and the Pittsburgh coal?

A. It stands about the same. It is used for gas. It will often bring a high price when coal is very high. But when coals are only a moderate price, ours bring the same as Pittsburgh coal.

By Mr. SHERMAN:

Q. How much does it cost you to transport coal to Cincinnati from your place when the water on both rivers is at a good stage?

A. In counting the cost of taking coal down you must count the cost of bringing the boat back. Then it is 50 cents a ton.

Q. Is that a good business?

A. Yes, sir; that is a good business to carry coal on that time. In fact our towing was done formerly under that sort of contract.

Q. It is a good business for the carrier?

A. Yes, sir; because tow-boats make that sort of contract with the coal-mines.

Q. If the river were in good condition at all times, so that the barges could be towed by the tugs all the year round, it would be an easy thing to transport coal to Cincinnati at 50 cents a ton?

A. Yes, sir; adding the tolls.

Q. How much to Saint Louis?

A. I am unable to answer that. We have never shipped there.

Q. How as to Louisville?

A. That would be about one-third more than to Cincinnati. We have had very little experience in that way. Our coal has almost all gone to Cincinnati.

Q. You say it would cost from seventy-five cents to a dollar and nine cents to ship to Huntington. How much would it cost to load from the cars at Huntington and ship to Cincinnati?

A. It costs a cent to ship from Huntington to Cincinnati, or 25 cents a ton to handle and ship, and fetch the boat back. It is hardly fair to speak of it as a fair task, because the loading-works there were constructed by the railway, and they are very awkward, but it costs about one-quarter of a cent a bushel to load the coal at Huntington in addition to the one cent.

Q. What is the cost of transporting coal from above Iron-ton to Cincinnati?

A. It would be just about the same as it would from Huntington. The difference of a few miles is nothing to a tow-boat.

Q. Then the cost of coal in Cincinnati, if the river was in a good stage during all the navigable portions of the year, would be about \$2.50 a ton, allowing you \$2?

A. Yes, sir.

Q. If the river was in a navigable stage during the navigable portion of the year, what could you deliver coal on an average for at your place?

A. Do you mean to afford a reasonable profit, or do you want the actual cost?

Q. To afford you a reasonable profit.

A. I should consider 8 cents a bushel, or \$2 a short ton, as a fair price for coal put on the boats.

Q. Could you not do it for less?

A. We could, but I am estimating a reasonable profit. It would not cost over 6 cents a bushel to put it on the boat, and it might perhaps be done for 5½ cents.

Q. Then you would allow 2 cents?

A. Yes, sir; we must have 2 cents for any profit. There are working expenses independent of what we pay those persons actually connected with the mining.

Q. Is half a cent a bushel considered a very good profit to the owner of a coal-mine?

A. If you mean the land, the royalty, it is.

Q. What is the other cent and a half made up of?

A. Do you mean as to expenses?

Q. Yes, sir.

A. We pay, upon an average, 4 cents a bushel for mining coal. We employ a large force of haulers, men who let the coal down the hill, and men who load it in the boats, and caulkers to take care of the boats, and carpenters to do all sorts of odd jobs. When a mine employs one hundred and twenty miners, there are about seventy-five men employed about other work. There are several men in the mine laying track. We have miles of track in our mine laid by track-layers, receiving from \$2.50 to \$3 per day; therefore, this other cent and a half, or even two cents, must go to cover that sort of expense. That is an element of cost. The cost of the coal in the boat is 6 cents a bushel; but we must have 8 cents to make it worth while to employ our capital.

By Mr. SHERMAN:

Q. Then you could deliver it, at a fair stage of water, at \$2.50 a ton to Cincinnati in the boat.

A. Yes, sir.

Q. What is the fair average of value of coal in Cincinnati on the boat, taking the year around?

A. The average value, year by year, has been 14 or 13 cents.

Q. Make the computation by the ton, if you please.

A. That would be twenty-eight bushels to the ton. Everything goes by bushels in this country. I will tell you by the ton in a moment. It would be \$3.25, in Cincinnati, by the ton.

Q. That, you think, is about the average?

A. That is about the average price, in Cincinnati, one year with another.

Q. Then, with proper improvements in the river, you think you could deliver coal about one-third less?

A. Undoubtedly, if the river was in good condition, coal could be delivered in Cincinnati at between 10 and 11 cents.

By Mr. CONKLING:

Q. What vehicles do you ship on this river?

A. We use barges and flat-boats; all built on the same principle, except the barge, which is more substantial than the flat-boats. They are about 120 feet long, 22 feet wide, and 6 feet deep, and those boats will carry about four hundred tons of coal.

Q. Drawing how much water?

A. Six feet deep; we load four and a half feet, about four hundred tons of coal.

Q. Where, in starting from your works, do you strike the first bar?

A. Within a half mile of the works at Cabin Creek Shoal.

Q. How much water is there on that shoal in an ordinary stage of low water?

A. That has been partly cut down, but I suppose before this rise took place there would hardly be 15 or 20 inches of water.

Q. What is the nature of that shoal?

A. It is loose cobble-stone, and not sand. It can all be picked up by a dredging-boat. There is no stratified rock.

Q. Where do you come to the next shoal?

A. Four miles below, of just about the same character.

Q. And of about the same depth of water?

A. Yes, sir; about the same thing. Those are the only shoals between our place and Charlestown.

Q. And below Charlestown how many are there?

A. Below Charlestown there must be about seven, of which three or four of them are within a short distance of this town.

Q. Are any of them stratified rocks?

A. I do not think any of them are.

Q. But all stone?

A. Wherever a creek comes in here there is a pool above the creek and a dam at the mouth, and that makes the shoal, so that we have always deep water above.

Q. Apart from those shoals, seven or eight below here and three or four above, what is the depth of water, as a rule, in low water?

A. At Coalsburgh we have a pool three-fourths of a mile long and at every low water it must be 9 feet deep. There is a deep pool before. Down the river, as you get to the mouth of the Ohio, it is drained off a good deal, and there is the lowest water.

Q. Having removed these shoals, what would be the point of lowest water, and how shoal would it be?

A. These shoals, as I understand it, never would be removed entirely. They would be cut through. They are deep enough.

Q. Eliminating them from the channel, how much depth of channel would you have in the lowest place, apart from these shoals?

A. With all the upper part of the river, from our place down for twenty or twenty-five miles, so far as I know, I should suppose there would be at least 78 feet of water after giving us a good cut through the shoals.

Q. In the shoalest places?

A. Yes, sir.

Q. Is the cutting of those shoals an expensive work?

A. No, sir, it is not.

Q. Very inexpensive, I should think.

A. A great deal can be done with not much money and always has been done. A dredging-boat will make a long cutting in one season, perhaps expending \$5,000.

Q. What do you account your interest as a miner and a representative of this company in the proposed channel east from here?

A. I do not quite understand your question.

Q. How would the opening of this water channel to the east affect yourself and other coal-mining interests here?

A. I think that our lands would rise in value; I cannot tell how many fold, but mining would commence on all our creeks and all along the river, and we would be equal to filling any demand that might arise; all the sea-board.

Q. In other words, the same disadvantage that you have described existing westward exists in a greater degree to the east, and the benefit would be greater to you of opening the channel eastward than westward?

A. We should have, I suppose, many times the market eastward for our coal, if we could get it there at reasonable figures. Our great market, I think, would be to the east.

We have on our property, in addition to the coal which we are actually mining, all the qualities of coal which have been described by Professor Ansted. We have abundance of cannel and of bituminous coal, with all sorts of grades, nearly all of which is excellent coal, that is free from sulphur and impurities, and we have several seams of this same splint-coal.

Professor Ansted gave you an account of a section of a coal-field; I have had something of the same work done this summer on Paint Creek, above us. We had in one hill twenty-one seams of coal opened and exposed to view, and thirteen of those seams we had opened so that we could see how thick they were. These thirteen seams contained 52 feet of coal, all of which was over 2 feet thick.

By Mr. DAVIS:

Q. How thick is the vein you are now working?

A. At the point we are working it is from 6 to 10 feet thick, but on Paint Creek that is $11\frac{1}{2}$ feet thick and is nearly all splint-coal, but over a large section of it the cannel comes in the middle of it.

Q. How many tons do you get from an acre, on an average?

A. We count a cubic foot as a cubic bushel and a cubic yard as a cubic ton in round numbers. An acre is about 208 feet square. There are 40,000 bushels to the acre for every foot of thickness. That is just about it.

By Mr. DAVIS:

Q. That tells us how much there is, but how much do you get out on an average?

A. Do you mean how much do we mine?

Q. Yes, on an average.

A. Our company takes out what there is from an acre, and we say there is about one-third or one-quarter waste. Much of that waste could be saved, I have no doubt, if we had proper coke ovens, and means of saving it.

By the CHAIRMAN:

Q. What are the thicknesses of the veins?

A. From 6 to 10 feet where we are working, but at other points it is thicker, say $11\frac{1}{2}$ feet. A few miles it runs from 8 to $11\frac{1}{2}$ feet, partly cannel and partly splint and partly bituminous.

By Mr. DAVIS:

Q. To get at the relative cost of water and rail, how many miles is it from your mines to Cincinnati by water?

A. It is about two hundred and seventy-five miles by water from our place to Cincinnati, and by rail there are sixty-seven miles to Huntington.

Q. Then I understand from that that the two hundred and odd miles by water is carried for 50 cents, and the sixty-seven miles to Huntington is carried, say, for 90 cents?

A. The minimum is 75 cents; that is the very lowest at which it is carried. If coal was 10 cents a bushel, and we sold it at that, we should get it carried for 75 cents; so you may, perhaps, base it on that, and it could be carried for 50 cents from our place to Cincinnati if the water was all right.

By Mr. CONKLING:

Q. I wish to continue the voyage of one of those barges drawing $4\frac{1}{2}$

feet of water. Suppose the shoals were removed from here to Huntington. From there to Cincinnati how regularly and during what trade of the year can your barges run?

A. Do you mean from Huntington?

Q. Yes, sir.

A. You compel me to notice the disadvantages of the harbor there. They have located that town at a point where there is really no water. I mean at Huntington.

Q. What is the difficulty of the harbor?

A. The harbor at Huntington has very little water, and at low water it has scarcely a foot and a half or two feet deep where we load coal, so that we are often compelled to stop off work to allow the boats to float. The railroad undertook by contract to dredge it out, and make deep water, so that we could always load boats.

Q. Is that to be done?

A. They talk about it, but I do not suppose they will do it. But if they had continued their road a few miles farther, to the mouth of the Big Sandy, we should have had deep water all the time, and shipped nearly all the year round.

Q. And that work is incumbent of right upon the railroad company?

A. Yes, sir.

Q. Passing beyond that and getting now to the mouth of the Big Sandy and the river itself, and from there down to Cincinnati, what is the route?

A. Between the mouth of the Kanawha and Huntington is one very serious shoal, one of the worst on the Ohio River, called Guyenne. It is just about two miles above Huntington. We have one almost as bad at the lower end.

Q. Suppose the terminus of the road were carried to the mouth of the Big Sandy?

A. Then we should have had no trouble whatever.

Q. Now, start from there and speak of the distance from there to Cincinnati. What would be your navigation; how regular would it be, and during what part of the year for those barges drawing $4\frac{1}{2}$ feet of water?

A. If you take the water exactly as it is to-day we should not, when the water was low, load to $4\frac{1}{2}$ feet. We should load to the water, say 3 or $3\frac{1}{2}$ feet. We should keep going about from eight to nine months in the year then.

Q. On the Ohio?

A. Yes, sir.

Q. On $3\frac{1}{2}$ feet of water?

A. Yes, sir. We could ship coal from eight to nine months in the year.

Q. Which are the three months which you except?

A. September, October, and November. Now, to-day, in October, we have plenty of water. Last year we had not. But probably there will be three months in the year when the water will be too low to ship.

Q. Do you make in your statement any allowance for the river being closed by ice?

A. No, sir. In the winter you may have a month, and you may have six weeks, when it is impossible to ship for that reason.

Q. Then, apart from obstruction by ice, there are three months only in which you could not ship?

A. Yes, sir.

Q. So that your statement is that in getting water navigation from

here to Cincinnati your whole practical difficulty is between your mines and the mouth of the Big Sandy?

A. Yes, sir. Now, this year we shipped from the 1st of February, regularly, until some time in August, every week. There was no difficulty in shipping on 3½-foot boats. Suddenly the river fell and we had not water to load our boats or get them away.

It is not necessary that the coal should be constantly moving toward Cincinnati. If we had deep water to load boats so that when a swell came we should send twenty or twenty-five boats down at once, that would be the customary way, but we must have deep-loading water.

By Mr. SHERMAN:

Q. What is the distance between the mouth of the Big Kanawha and the Big Sandy?

A. It is about fifty-seven or sixty miles.

Examination of BENJAMIN H. SMITH, of Charlestown, West Virginia.

By the CHAIRMAN:

Question. Please state to the committee your views upon the necessity of improved navigation here; what facilities you already have; what resources you possess, and such other matters as may come within the subject of our inquiry.

Answer. I am not a practical geologist; I am not a shipper of coal; I have no connection with any iron business, but I am an old settler, and I have been conversant with the business of the country for nearly fifty years; in fact since I have resided here.

All my knowledge is general. I believe, and have believed for many years, that there is more mineral wealth in this valley, and the valleys connected with it, take Big Coal, Elk, Gauley, than any other part of the world of equal extent.

I have had some such information as you have on the subject, derived from history, from information from others and from geologists, but from that information I believe that there is no country on the globe which furnishes as much of mineral wealth—that is, in coal—as this country.

We used to think that salt was the all-absorbing subject, and no man was respectable, or a gentleman, in this country, who did not own salt property, and he that would talk about the value of coal being greater than that of salt was but little regarded; but I believe the opinion is now prevalent that salt is a very subordinate interest compared with coal.

I have had an acquaintance with all the geologists, I think, who have been in this part of the country. I was particularly intimate with Professor Rodgers, who explored this country. He was the State geologist, and was here for some time, and first conveyed to me an idea of the vast extent of the coal property in this country.

I have heard Professor Austed this evening, and I heard him when he was here before, and nothing has occurred from general information which in the slightest degree has changed my opinion about the amount of the interest in this part of the country.

As to the importance of this line of communication I have never had but one opinion about it. I have tried very hard to get it opened in some way. I have tried to get this James River and Kanawha Canal opened. I have regarded it as vital to the interests of this section of the country and vital to the interests of all this western country.

I am beginning to be a little shaken in my faith about railroads; I

think that they work too much for their own benefit, and that they calculate how much you can spare out of what you receive for your coal, considering that the balance is theirs. I think that they will ascertain what it will bring and then they will take from the price you get enough to let you pay them the carriage, and that is all. If there is any profit on it they will take it.

I do not want to be regarded as in the slightest degree in conflict with the Chesapeake and Ohio Railroad Company. I struggled very hard to get them to build the road and I do not want to detract from the merits that they really have, but I have learned recently, and with regret, that they seem to be following the plan of other railroads, to find out how much men can bear to pay, how much they can afford to give and live, and they just let the man live and take the balance. I think this railroad company is following very readily in that track. The only way to correct it is to make a line of water communication that will keep them in proper subjection. I think it will have a happy effect upon them. Now, this line of communication is not only valuable to us, and it would be, perhaps, of more value to this country than to any other portion of the United States, but the whole West are interested in it. Build a line of communication upon a scale that is worthy of the character of the Congress of the United States. Do not build any little bit of a ditch, but a large communication, which will take all the produce of these Western States, their wheat, their corn, and their other products to market, and there you can have a line of communication but little interrupted by ice.

Farther north the ice in the Erie Canal, I think, interrupts some four or five months in the year, but I do not think, on an average, that there would be more than two or three weeks of interruption on this line by ice. Build a large canal, such as I said with reference to the character of the great United States, and it will carry all the products of Ohio, Indiana, Illinois, Wisconsin, Tennessee, Missouri, Kentucky, and the whole West will find an easy and ready communication with the East, and with the eastern markets. Nothing short of that sort of a canal will answer the purpose. If you begin it, begin it in a style and in a magnitude that becomes the dignity of this magnificent nation, for we are a magnificent nation, and we have a vast amount of agricultural wealth here, all of it seeking an outlet, and you must make a line of communication that will give accommodation to the whole country. You will take off a half a bushel, perhaps, then from the cost of every bushel of wheat raised in that country, and one year's profits on this line of communication will pay for the whole expenses. I do not care what it costs. It can run the whole year, and take all the produce of the country if it is built as it ought to be built, and in the manner that it ought to be built. It will carry the whole produce of the western country along these lines to market.

I have had some little observation as to the lines of communication East and West. I have been somewhat familiar with all of them. I have traveled over them and I know the conveniences and inconveniences of each. I have examined the reports of skillful engineers and have been doing so for forty years, and I have long since come to this conclusion, that there is no line of communication between the East and the West comparable to this line. The waters of the James and the Kanawha, branches of each other, come and interlock, and there is but one summit-level, and that summit-level can be passed by a tunnel. It will cost a good deal of money; it may be a long tunnel; but its object is one vital to half the nation.

I say that the whole western world is interested in it; the whole territory west is interested. I think that the reduced price of transporting the produce of the western country to market will more than pay for this work.

The State of West Virginia and the State of East Virginia having made a large amount of improvements upon this line—that is, East Virginia while West Virginia was a part of it, and having expended a vast amount of money, I understand, give the whole of this work to Congress if she will finish it. It is really too great for any one State to accomplish. It is a national work, and nothing but a national work. It is not a State work. It is conducting commerce among the States under the language of the Constitution. It is not confined to one State, but to all these States, and I think there can be no question about its constitutionality, if we take Chief-Justice Marshall as a guide. And where it is commerce among the States it is legitimate. And here it is to facilitate commerce among the States. It is a great undertaking and is worthy the character of a great nation.

By Mr. DAVIS:

Q. Can you tell us about the timber in this whole country?

A. The Elk River is almost a virgin forest of from a hundred and fifty to a hundred and seventy-five miles long. I do not know by actual measurement myself, but we have a sort of navigation in this country known as log navigation, and a company who have attempted to improve Elk River have had it surveyed. They say that there is twelve hundred miles of log navigation on Elk; that is, creeks indenting the country and running up into the mountains where there is a vast amount of timber, all of which creeks will float logs into the Elk and bring them down to this place.

By Mr. SHERMAN:

Q. What kind of timber is that?

A. It is every sort of timber common to the western country. All the qualities of the oak, white oak, black oak, red oak, chestnut, poplar, beech, and sugar-trees. There are a great many other sorts of timber whose names I do not recollect, but in that country is all the timber common to the country.

By Mr. DAVIS:

Q. Is there not a quantity of pine in Pocahontas?

A. Yes, sir.

By Mr. SHERMAN:

Q. And ash?

A. Yes, sir.

By Mr. DAVIS:

Q. Wild cherry?

A. Wild cherry. And these hollows in all the streams are very rich land. It has been unexplored because there has been no line of communication by which it can be settled by business people, and it is almost a wilderness. I have traveled through it often for miles without meeting a house. And the Elk now, without any improvement, will float that all out. If such a communication as this was made, that they could get it to market, the people would strike out into the country and bring it to market.

By Mr. CONKLING :

Q. All the logs coming down here finding navigation now can go from here to the Ohio ?

A. Yes, sir, when they come down at a flood. Now, up the New River, of which you have had some idea to-day, where the wildest mountains are encountered, perhaps, this side of the Andes, it passes through a virgin forest and there is a vast amount of timber there on either side. All the streams that put into the Kanawha come out of the hilly country, where the timber is very little disturbed. There is a vast amount of timber there. In fact I do not know any part of the United States now, in this section of the country, where there is as much timber which can be utilized as there. I have never been engaged myself in getting timber, though I know all the different kinds of timbers and know their value.

The committee was asking some information about the navigation of this river. When I came here they were running out salt in boats that carried about four hundred barrels, and in 1824, I think it was, they commenced to improve the river by sluice navigation, and it has continued to improve from that day to this. The State spent about \$90,000, and after that the tolls received from the river were collected in part by the State and appropriated by the State, and a portion of them were all the while applied to improving the navigation. In 1822 a boat carrying two hundred barrels of salt, a halfload, alone could get out. Now, with the improvements of this sluice navigation, these boats can run out without any difficulty by the sluices, and, by a continuing improvement in sluice navigation, the boats have been from time to time facilitated in making their way to the Ohio River, but the natural state of the river—and that I suppose gentlemen speak of—comparing it to the Ohio, was very inferior for running out. As I say, the sluice navigation from here to the mouth has so improved it as to enable small boats now to run all the time up and down the river. It is by reason of this change of the natural current, by works upon it by dredge-boats and by machinery of that kind, that they have improved the depth of the channel for, say, twenty, thirty, forty, or may be fifty feet wide, which they can run up. They are now expending \$25,000, I think, appropriated by Congress, and they are expending all the tolls in addition to making sluice navigation to enable them to get out with their salt.

By Mr. SHERMAN :

Q. Do they levy tolls now ?

A. Yes, sir ; by the State. And West Virginia, after its separation, became the owner, and claimed and exercised the right of controlling this work. It formerly belonged to the State. There are tolls levied now upon all the salt and all the coal and everything that goes out for the present very imperfect improvement which we have. By this sort of improvement we have a navigation for small boats and small barges better, perhaps, than it is in the Ohio above, but not equal to the Ohio below the mouth. Since 1824 there has hardly been a year that some money has not been expended in this way in improving the channel.

By the CHAIRMAN :

Q. What are those tolls, if you remember ?

A. Two cents and a half for a barrel. There is a tariff on coal also.

Examination of Dr. J. P. HALE.

By the CHAIRMAN :

Question. Are you engaged in the manufacture of salt ?

Answer. Yes, sir; I have been engaged in it a number of years.

Q. State any facts with reference to its manufacture, and the statistics of that production which may occur to you as important.

A. Salt has been made in this valley since 1858, more or less, but at sometimes much more largely than at present. The manufacture at present, from particular reasons, is less than it was some years ago. The largest annual product we have had has been a little less than three and one-half millions of bushels.

Q. State the product at present.

A. The present product is about a million and a half.

By Mr. CONKLING:

Q. Are you speaking of your own works?

A. No, sir; I am speaking of the product of the valley. A system of what is termed dead rents has prevailed for a few years past. A number of the furnaces were thrown out. That has curtailed our prices. That expires next year, and there will be more salt made. We have had several dead-rent systems here. The present one was paid by the Ohio River Salt Company. It is a company existing on the Ohio River near Pomeroy. They purchased all the salt made on this river a few years ago, and finding that they had more than the markets would consume they were under the necessity of curtailing, and they took that method of doing so. They pay the furnaces so much a year to lie idle instead of paying them for salt when made.

Q. What is that estimated a year?

A. That is a matter of contract in each particular case. Some get more and some get less. It generally amounted to so much per bushel, say two or three or four cents.

Q. And it is a payment per bushel based upon the producing capacity of the works?

A. The amount was arrived at by a calculation of that sort, but it was not finally so much per bushel, it was so many thousand dollars for a furnace.

Q. But that was the mode of getting at it?

A. The productive capacity of each of the furnaces was one of the elements.

By the CHAIRMAN:

Q. Where have your markets been?

A. Our chief markets have been westward, through the Ohio and Mississippi Valleys and the tributaries of these streams, and the railroads branching out from them.

Q. Have you a market eastward since the opening of the road?

A. Yes, sir; a small one, but very small on account of the high freights.

Q. Please state your freights eastward.

A. They commenced with us at a dollar a barrel, but we afterward got a special rate for a time. This year it is sixty cents from here to Richmond and all points this side.

Q. What is the weight of a barrel of salt?

A. Two hundred and eighty pounds net; about three hundred pounds gross.

By Mr. DAVIS:

Q. Did I understand you right when you stated all points this side?

A. Yes, sir. When you get beyond a point where the local schedule would prevail.

Q. How far would that be?

A. About a hundred miles. After you get to Hinton or that region it is the same.

Q. And the same price for a hundred miles that it would be for three hundred?

A. Yes, sir; or nearly four hundred; say to Richmond. That is a special contract.

By the CHAIRMAN:

Q. You speak, of course, of the Chesapeake and Ohio Railroad?

A. Yes, sir; that is the only outlet we have in that direction. Heretofore we have had no market in that direction except what was wagoned up a hundred miles or so.

Q. What do you pay westward?

A. Our freights to Cincinnati are about 25 cents a barrel.

Q. By what route?

A. Down river.

Q. What is the distance?

A. It is less than three hundred miles—two hundred and sixty miles.

Q. Do you ship any over the railroad westward?

A. We have shipped about fifteen hundred barrels recently from here to Huntington, and from there to Cincinnati, and from there to the Ohio ports.

Q. Do you ship through to Cincinnati?

A. Yes, sir.

Q. I mean by rail and river?

A. Yes, sir.

Q. What are the charges?

A. We had a special contract there while the river was low, and we could not ship East at 25 cents from here to Cincinnati.

Q. The same by rail or boat?

A. Yes, sir; it was the same we were paying by boat.

Q. What do you regard as the chief difficulties in the full development of the salt business here?

A. Uniform and reliable navigation is the great difficulty we have. At the present moment I have about twenty thousand bushels of salt lying in my yards waiting for shipment. We have had low water here for two or three months. There is an active and great demand in the market now for salt, and a good deal of it is sold to be delivered, and yet we have not been able to ship any by river for two months or more.

Q. That demand is in the western markets?

A. Yes, sir.

Q. Could you compete with the eastern markets?

A. Yes, sir; if we had water transportation eastward I think we could take all the market from Baltimore, say down to the Gulf on the sea-board—the Atlantic States. From Baltimore up we would come in conflict with the New York salt. They could deliver as cheaply perhaps in New York and Philadelphia as we could, but from Baltimore south, all along the sea-board, we could no doubt deliver cheaper than they could get it from New York or Liverpool, from whence the chief supply comes.

Q. How does the salt water here compare with that from Syracuse in strength?

A. It is not so strong, but we have an advantage over them in cheap fuel. They are not near any coal-fields. We have the coal at our doors, and the actual cost of mining is our only expense. Another

advantage which we claim that our salt has over theirs is its freedom from lime. We have no sulphate of lime, or lime of any form, in our brine. We find that a very great advantage in the quality of the salt and in the manufacture of it. We manufacture by a different process. They make it in kettles alone, except the solar salt. All they make by artificial heat is boiled in kettles. We granulate our salt in large wooden vats heated by steam-pipes running through them. Our cisterns are about 10 feet wide, about 100 to 150 feet in length, and about 18 inches deep. There are generally about five principal pipes, about five inches in diameter, passing through, those supplied by steam keeping up a temperature of from 160 to 200.

Q. What is the price of salt at your manufactory?

A. Our retail price is about \$1.40 a barrel.

Q. What is the extent of the salt-territory here, as you understand it?

A. Salt has been made for ten or fifteen miles along the river, but it is very much narrowed now. It is only within two or three or four miles. Experience has shown that the strongest brine is found some three or four miles on either side of the river.

By Mr. SHERMAN:

Q. How deep do you bore?

A. In one instance a well was bored here about 2,000 feet. Some few have been bored to fifteen and eighteen hundred feet, but the usual depth is 800 to 1,000 feet. The belief was that we got no brine after about 1,000 feet; that all the boring beyond that amounted to nothing.

By Mr. CONKLING:

Q. How many wells have been bored in all?

A. There are about one hundred and twenty wells in the whole district.

Q. How many are extinguished?

A. They could all be worked again, but some are not as good as they have been.

Q. How many are abandoned, then?

A. I believe half, or a third of them at any rate, we consider abandoned, and the others are practically abandoned. They may never be started again, and are idle at present.

Q. How many salt-works are there in this valley?

A. There are in operation to-day only five.

Q. How far from this place?

A. They are all about eight miles, commencing about three and a half miles above the town. The last one is about eight miles away. There are a number of other idle ones, five, or six, or seven, within the same territory under this dead-rent system. Several of them will be started on the 1st of January.

By Mr. DAVIS:

Q. In speaking of the products of the valley did you include the Ohio River—Mason County?

A. O, no, sir.

Q. Do you know the products of that?

A. The entire product of the Pomeroy region on both sides, above and below, will be, I suppose, four millions of bushels this year. They have over twenty furnaces in active operation there now. They are about fifteen miles above the mouth of this river; some are more and some are less.

By Mr. NORWOOD :

Q. Are those wells abandoned because of the diminution of the yield ?

A. Some of them have been abandoned on that account both in the upper and lower portions of the district. There seems to be a basin here, and on either margin of it, up or down, the brine seems to have deteriorated to such an extent that they were not profitably worked, and have been abandoned for some years, but toward the center of that basin the brines are still good.

Q. Have you discovered any indication of the failure of the yields ?

A. There is a little deterioration in the brine from year to year. You cannot see it in any one year, but taking a series of ten years it is perceptible.

Q. You have already mentioned the percentage of the yield, have you not ?

A. I have not.

Q. State that, if you please.

A. We use a hydrometer graded from one to twenty five, one being fresh water, and twenty-five being saturated brine. We use an instrument to mark the degrees of water. The usual strength of the brine we are working here is from eight to about ten—eight, nine, ten, eleven, twelve. They vary a little at different wells ; we generally call it about ten.

Q. What percentage of that has been lost in an average of ten years ?

A. Ten years ago I suppose it was a degree stronger than it now is, on an average ; some wells, two or three degrees. In others the deterioration is scarcely perceptible, but, I suppose, taking the general average in ten years, there would be a difference of a degree in the strength of the brine.

Q. It is your opinion, then, that the enterprise will have to be abandoned after a while for want of yield of saline matter ?

A. It looks quite possible that that may be the result of it sooner or later ; not in a life-time, I suppose, but eventually that would be the result.

By the CHAIRMAN :

Q. Do your new wells show the same strength as the old ones ?

A. No, sir ; none of the wells bored now are as strong as those of twenty or thirty years ago. It was not uncommon to have a well stand at fifteen, and now it is a rare instance that you get it above ten or eleven. That effect is brought about, however, in all probability, by the number of idle and abandoned wells allowing a large quantity of fresh water to find its way down into the general reservoir of salt water below. It is thought, by persons experienced in the business here, that if those wells were blocked up, keeping the fresh water away, that the wells might regain their entire strength. That is a theory, however, and I do not know whether it would be true or not.

A possible source of large operations is the manufacture of chemicals of which salt is the basis—principally soda-ash, which is a very large manufacture in England, and is not made at all, or to a small extent only, in this country. The importations last year of soda-ash into this country were a hundred thousand tons. This valley is well adapted to the manufacture of it, having the salt abundant and cheap, and the fuel as cheap as it can be found anywhere. Two years ago the statistics in England showed that one hundred and eighty-odd thousand tons of raw material were used in the manufacture of soda-ash. The English are

the largest manufacturers. It can only be manufactured where salt is very cheap, and that can be found nowhere cheaper than it can be manufactured here. Cheap salt and cheap fuel are the two ingredients. The fuel we have here for the mere digging.

After soda-ash there are a large number of other manufactures that require salt and soda-ash, such as glass. This would make, then, a good point for the manufacture of glass. We have also good sand. Many practical men have pronounced it admirably adapted for glass-manufacture.

In addition to glass, soaps, and manufactures of that sort, require an immense amount of soda-ash. They could be manufactured here very cheaply, having all the ingredients except the grease, which could be brought by return barges coming from the various markets. Cheap coal, salt, and soda-ash would be on the ground.

Bromine is being manufactured now to some extent, and a large percentage of bromine is found in these brines. Bromine from one furnace up here is manufactured at the rate of a hundred and twenty pounds per day. The demand for that is increasing very largely, the consumption is increasing very largely, and it is getting to be a very important manufacture.

Iodine has also been made, to a small extent, here, from the refuse of these salt-water works; also bleaching-powders, sulphate of soda, and a number of chemicals.

Examination of A. E. SUMMERS, of the West Virginia senate:

By the CHAIRMAN:

Q. I do not know to what point to call your attention, and will ask you to submit any suggestions to the committee which will inform them in reference to their investigation, which may occur to you.

A. Mr. Chairman, I do not know to what point the examination has gone, and do not know but what I will be repeating if I go into a general statement.

Q. The particular point we have come here to investigate is, the practicability and desirability of this proposed water-line. We should like to hear of that, together with any information which you may be able to give us upon the general subject of transportation.

A. So far as our transportation is concerned, so far back as I can remember, having lived here all my life, we have always looked to there being more water in this river, when there was a run of low water, than in the Ohio. One difference is that when a boat is too heavily loaded and strikes here she strikes hard, and there she has an easier bottom and does not hurt herself. As a question of low water, we always have more water for navigation here than there. We can take out a more heavily loaded boat. The products here are heavy as a general thing. They are salt and coal, the products of the forest and our agricultural products, and, of course, matters of that kind need water-transportation rather than rail. We cannot get our products East because we want the cheaper transportation afforded by the water, the railroad not being able to supply the transportation even if their rates could be made available.

By Mr. DAVIS:

Q. I take it that you have some valuable information which you might give the committee without any formal questions. I have read in the papers that you lately made a speech here in which some very valuable statistics were given as to the products and resources of the valley.

Anything that you, yourself, wish to communicate the committee would be glad to hear.

A. It having been intimated to me that I would be requested to make some statements, I have cut from the paper a table which I had formed and which is taken from the United States Census, which gives a great deal of the matter in statistical form, covering agriculture, manufactures, mining, &c. They are as follows:

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, and their present development, prepared from the ninth census of the United States.*

Relative rank.	For what.	Number, quantity, or value.
GROUP 1.		
29	Area, square miles	23, 000
	Acres	14, 720, 000
27	Population	442, 014
GROUP 2.		
24	Area in actual cultivation, acres	2, 580, 254
16	Woodland in farms but not in actual cultivation, acres	4, 364, 405
10	Size of farms, acres	214
22	Number of farms	39, 778
20	Value of farms	\$101, 604, 381
31	Value of farm-implements and machinery	\$2, 112, 937
GROUP 3.		
29	Value of all farm-products, including betterments and additions to stock for census year	\$23, 379, 692
	Value of home manufactures	\$615, 412
12	Wheat, (winter,) bushels	2, 480, 148
13	Wheat, (spring,) bushels	3, 395
22	Corn, bushels	8, 197, 865
19	Oats, bushels	2, 413, 749
15	Rye, bushels	277, 746
23	Barley, bushels	50, 363
13	Buckwheat, bushels	82, 906
23	Potatoes, (Irish,) bushels	1, 053, 507
23	Potatoes, (sweet,) bushels	46, 984
13	Seed, (clover,) bushels	3, 939
18	Seed, (flax,) bushels	2, 393
16	Seed, (grass,) bushels	3, 868
19	Hay, tons	224, 104
12	Flax, pounds	82, 726
14	Wool, pounds	1, 593, 541
22	Average weight of fleece	2. 89
14	Tobacco, pounds	2, 046, 452
9	Sugar, (maple,) pounds	490, 606
21	Butter, pounds	5, 044, 475
28	Cheese, pounds	32, 429
9	Molasses, (maple,) gallons	20, 200
8	Molasses, (sorghum,) gallons	780, 829
23	Horses, number	99, 362
27	Cattle, number	337, 881
22	Hogs, number	268, 031
16	Sheep, number	552, 327
27	Value of all live stock	\$17, 175, 420
18	Value of animals slaughtered or sold to be slaughtered	\$4, 914, 792
17	Value of orchard-products	\$848, 773
22	Value of forest-products	\$363, 668

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
MANUFACTURES—GENERAL.		
24	Number of manufacturing establishments	2, 444
19	Number of steam-engines used	509
21	Number of water-wheels used	683
24	Aggregate horse-power of engines and water-wheels	27, 331
25	Number of hands employed	11, 672
25	Capital invested	\$11, 084, 520
24	Wages paid	\$4, 322, 164
23	Materials used, (value of)	\$14, 503, 701
24	Value of all products	\$24, 102, 201
GROUP 4.—IRON—GENERAL.		
19	Number of establishments	38
14	Hands employed	2, 100
11	Wages paid	\$1, 364, 195
14	Capital invested	\$2, 084, 900
13	Value of products	\$5, 168, 892
GROUP 5.—IRON—SPECIAL—PIG.		
14	Number of establishments	5
13	Blast-furnaces	7
14	Daily capacity, (tons)	68
13	Hands employed	317
12	Wages paid	\$179, 720
15	Materials used	\$243, 300
14	Capital invested	\$434, 000
15	Value of products	\$577, 200
13	Amount of products, (tons)	16, 950
IRON—CAST.		
22	Number of establishments	24
16	Daily capacity, (tons melted metal)	89
22	Hands employed	285
21	Wages paid	\$167, 488
20	Capital invested	\$462, 100
21	Value of products	\$566, 072
IRON—ROLLED.		
8	Number of establishments	8
6	Hands employed	1, 498
6	Wages paid	\$1, 016, 987
8	Capital invested	\$1, 185, 800
6	Value of products	\$4, 025, 620
IRON—CASTINGS.		
26	Number of establishments	16
24	Hands employed	148
21	Wages paid	\$31, 988
21	Capital invested	\$286, 900
27	Value of products	\$291, 922
IRON—STOVES, HEATERS, AND HOLLOW-WARE.		
9	Number of establishments	8
12	Hands employed	137
10	Wages paid	\$85, 500
10	Capital invested	\$175, 200
11	Value of products	\$274, 100

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
IRON—NAILS AND SPIKES CUT AND WROUGHT, AND TACKS.		
5	Number of establishments.....	8
3	Hands employed	1, 156
3	Wages paid	\$722, 460
3	Capital invested.....	\$983, 000
3	Value of products.....	\$4, 665, 000
GROUP 6.—AGRICULTURAL IMPLEMENTS.		
		11
22	Number of establishments	58
26	Hands employed.....	\$24, 183
23	Wages paid	\$57, 650
24	Capital invested.....	\$58, 281
25	Value of products	
GROUP 7.—SALT.		
5	Number of establishments	18
2	Hands employed	661
2	Wages paid	\$290, 800
2	Capital invested.....	\$1, 631, 000
1	Value of products	\$1, 507, 605
2	Amount manufactured—bushels.....	\$4, 633, 750
1	Capacity—1873.....	\$7, 621, 654
GROUP 8.—TOBACCO.		
19	Number of establishments	45
20	Hands employed	198
21	Wages paid	\$69, 559
24	Capital invested.....	\$46, 775
21	Value of products	\$277, 573
GROUP 9.—WOOL, WOLLEN GOODS, CLOTH DRESSING, AND CARDING.		
14	Number of establishments	74
23	Hands employed	316
24	Wages paid	\$59, 828
27	Capital invested	\$236, 100
23	Value of products	\$125, 763
	[And no shoddy.]	
GROUP 10.—PRINTS.		
7	Number of establishments	1
8	Hands employed	5
8	Wages paid	\$1, 600
7	Capital invested	\$20, 000
8	Value of products	\$45, 000
7	Amount produced—yards	175, 000
GROUP 11.—LEATHER, TANNED AND CURRIED.		
13	Number of establishments	178
18	Hands employed	328
21	Wages paid	\$68, 892
18	Capital invested	\$466, 379
20	Value of products	\$840, 845

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
GROUP 12.—LIQUORS, MALT.		
25	Number of establishments	11
23	Hands employed	43
24	Wages paid	\$18,720
20	Capital invested	\$145,100
22	Value of products	\$157,530
GROUP 13.—LIQUORS, DISTILLED.		
14	Number of establishments	10
12	Hands employed	79
9	Wages paid	\$32,468
12	Capital invested	\$218,441
15	Value of products	\$206,258
GROUP 14.—LUMBER.		
21	Number of establishments	348
23	Hands employed	1,612
24	Wages paid	\$393,368
24	Capital invested	\$1,160,950
29	Value of products	\$1,696,539
GROUP 15.—PAPER.		
18	Number of establishments	4
19	Hands employed	72
18	Wages paid	\$31,386
18	Capital invested	\$156,000
16	Value of products	\$212,182
GROUP 16.—FURNITURE AND HOUSE FIXTURES.		
26	Number of establishments	47
25	Hands employed	155
25	Wages paid	\$50,460
25	Capital invested	\$34,850
26	Value of products	\$144,533
GROUP 17.—FOOD AND FOOD PREPARATIONS.		
21	Number of establishments	492
26	Hands employed	803
34	Wages paid	\$103,283
22	Capital invested	\$1,551,607
25	Value of products	\$5,007,237
GROUP 18.—ARTICLES OF WEAR.		
21	Number of establishments	206
26	Hands employed	760
24	Wages paid	\$152,193
26	Capital invested	\$202,543
24	Value of products	\$767,912
GROUP 19.—SADDLERY AND HARNESS.		
18	Number of establishments	76
18	Hands employed	171
29	Wages paid	\$21,785
21	Capital invested	\$57,553
19	Value of products	\$162,657

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
GROUP 20.—BRICK AND TILE.		
22	Number of establishments.....	24
26	Hands employed.....	262
24	Wages paid.....	\$67,835
17	Capital invested.....	\$182,975
27	Value of products.....	\$139,059
GROUP 21.—FLOURING AND GRIST MILLS.		
20	Number of establishments.....	476
22	Hands employed.....	770
27	Wages paid.....	\$94,618
20	Capital invested.....	\$1,539,257
23	Value of products.....	\$3,933,902
25	Daily capacity—bushels.....	34,493
GROUP 22.—MACHINERY.		
27	Number of establishments.....	15
29	Hands employed.....	355
29	Wages paid.....	\$189,600
23	Capital invested.....	\$355,500
30	Value of products.....	\$313,343
GROUP 23.—GLASS.		
10	Number of establishments.....	1
9	Hands employed.....	150
9	Wages paid.....	\$22,000
8	Capital invested.....	\$130,000
9	Value of products.....	\$200,000
GROUP 24.—COOPERAGE.		
11	Number of establishments.....	101
12	Hands employed.....	549
11	Wages paid.....	\$140,243
16	Capital invested.....	\$125,632
12	Value of products.....	\$488,476
GROUP 25.—BOOTS AND SHOES.		
20	Number of establishments.....	252
25	Hands employed.....	429
28	Wages paid.....	\$65,620
26	Capital invested.....	\$56,195
26	Value of products.....	\$349,018
GROUP 26.—BOATS.		
12	Number of establishments.....	3
7	Hands employed.....	66
8	Wages paid.....	\$21,400
8	Capital invested.....	\$38,000
8	Value of products.....	\$86,300
GROUP 27.—BLACKSMITHING.		
26	Number of establishments.....	390
27	Hands employed.....	475
31	Wages paid.....	\$51,315
29	Capital invested.....	\$90,285
27	Value of products.....	\$343,014

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
GROUP 28.—BUILDING-MATERIAL.		
22	Number of establishments.....	380
26	Hands employed.....	1, 892
25	Wages paid.....	\$468, 253
23	Capital invested.....	\$1, 374, 825
30	Value of products.....	\$1, 839, 714
GROUP 29.—MINING—GENERAL, (INCLUDES OIL, COAL, AND QUARRYING.)		
8	Number of establishments.....	185
16	Hands employed.....	1, 527
13	Wages paid.....	\$821, 613
11	Capital invested.....	\$1, 554, 499
12	Value of products.....	\$2, 538, 531
GROUP 30.—COAL.		
7	Number of establishments.....	41
8	Hands employed.....	1, 140
7	Wages paid.....	\$619, 376
6	Capital invested.....	\$1, 434, 800
6	Value of products.....	\$1, 035, 802
GROUP 31.—ASPHALTUM.		
1	Number of establishments.....	1
1	Hands employed.....	23
1	Wages paid.....	\$20, 000
1	Capital invested.....	\$514, 286
1	Value of products.....	\$450, 000
GROUP 32.—PETROLEUM.		
2	Number of establishments.....	140
2	Hands employed.....	347
2	Wages paid.....	\$176, 137
2	Capital invested.....	\$600, 813
2	Value of products.....	\$1, 029, 119
2	Amount produced—gallons.....	8, 013, 340
GROUP 33.—OIL-REFINING.		
4	Number of establishments.....	10
6	Hands employed.....	82
7	Wages paid.....	\$22, 850
7	Capital invested.....	\$125, 050
7	Value of products.....	\$432, 650
GROUP 34.—BUILDING NOT MARINE.		
18	Number of establishments.....	140
18	Hands employed.....	410
17	Wages paid.....	\$117, 460
18	Capital invested.....	\$127, 495
20	Value of products.....	\$467, 201

TABLE NO. 1.—*Showing the material interests, industries, and resources of the State of West Virginia, &c.—Continued.*

Relative rank.	For what.	Number, quantity, or value.
GROUP 35.—MISCELLANEOUS.		
<i>Free Schools.</i>		
21	For school population.....	154,596
20	Number of school-houses.....	2,216
16	Number of teachers, year ending August 31, 1862.....	2,645
17	Amount expended per capita of population of school age.....	\$4.99
<i>Vital Statistics.</i>		
25	Population to square mile.....	19.22
2	Numerical size of families.....	5.63
5	Healthfulness (death rate) being.....	.91
16	Longevity (75 years and over).....	
<i>Churches.</i>		
7	Church sittings in proportion to population.....	
<i>Taxation.</i>		
6	All taxation except Federal, \$100 value.....	\$1.23
	Average among the States, per \$100 value.....	\$1.98
9	All taxation except Federal, distributed per capita.....	\$3.89
	Average of all taxation, except Federal, among the States, distributed per capita.....	\$7.04

The exact rank of West Virginia among the States, as shown by the above table, is 16.83, or seventeen one-hundredths higher than the seventeenth position.

Q. Have you any general information?

A. None that I know, except what I presume has been already stated by other gentlemen. I know of nothing special, although I know of what the general production consists.

Q. To what extent do you suppose, if general communication was opened through here, you would be troubled in the winter-time by ice, or other obstructions?

A. I do not know, sir, but we are very seldom troubled. I do not think it will average a week at a time that we are troubled with our river being closed. I have known it when under very peculiar circumstances in very cold weather, that the river has frozen for four or five weeks, but, as a general thing, I do not think our freezes will average more than a week to ten days, and it has been frequently the case that we went through the winter without any freezing of the river. I have known a number of instances of that kind.

Q. How does the stage of water now compare with years usually? Is it at its lowest stage?

A. No, sir; to-day the water is not at its lowest stage, but it is pretty well down to that.

Q. In the lowest time, in the summer, how much have you on your different bars?

A. I cannot answer that, from the fact that they have been improving

them and digging them out, and since that has been done I am not familiar with the amount of water.

Q. The Government made an appropriation of \$25,000 last year; is that being expended on the river?

A. Yes, sir; the engineer, Mr. Scott, is here under the orders of Colonel Merrill since early in the summer, and the dams are now being erected, and money is being expended by the erection of dams.

Q. Is the State also making expenditures on the river?

A. The State has been making expenditures, not directly from the State treasury, but has been expending the tolls. Every year there has been a considerable amount of tolls collected. I do not think that the old State ever looked to it very much as a feeder to the treasury, but has consumed the collections in improving the river.

Q. Will you, or some other gentleman, speak of the legislation which has taken place on the part of the State toward transferring to the General Government the river and its franchises?

A. There have been several steps taken by the legislature at the different sessions with reference to it. There were joint resolutions introduced last winter and passed before Christmas. I think there is a certified copy of those resolutions here for presentation to the committee, appointing certain gentlemen to act as agents of this State for the purpose of transferring or negotiating with the United States for the transfer of the line, but my recollection of the resolutions is that they were not empowered to act finally in the matter. They were a medium of communication to give information and to make their report to the State. I do not think that the final power could have been given them simply by joint resolution. However, as I say, I understand the papers are here for the use of the committee.

Q. I understand that commissioners were appointed. Have you any doubt of the willingness of the State to transfer its entire property free of charge to the General Government in the event of the General Government agreeing to make the canal through?

A. I could not speak positively about it, but I do not think there is a particle of doubt upon that subject.

By Mr. SHERMAN:

Q. Are there any stone quarried here for shipment?

A. No, sir; we have no stone that we are in the habit of shipping, though we have some very fine building-stone here.

Q. (To Dr. Hale.) Where does your salt find a market?

A. Through all the States bordering on the Ohio and Mississippi Rivers, Tennessee, Cumberland, Wabash, and Missouri. In fact, all the western country going out to Omaha, some in Chicago, some in Cleveland.

Examination of Judge J. D. CAMDEN:

The legislature of this State is now in session in the capitol, and they have appointed a joint committee of our house and of the senate to report to your committee, not so much to impart information as to extend to you the courtesies and hospitalities of the State. It was but this morning that we understood a statement of facts which you had under consideration was desired. We are not, therefore, prepared to furnish as full and satisfactory a statement as we should otherwise have presented. The committee is now present; I am a member of that committee. I do not know that I could give much information in addition to what has been said, especially as this is not my place of resi-

dence. I live in Clarksburgh, about a hundred and thirty miles east of this on the line of the Baltimore and Ohio Railroad. The committee have procured a copy of the joint resolution adopted by the legislature at its session last winter and which I propose to present to this body. It will be seen by those resolutions that the board of public works was authorized to appoint commissioners to confer with the authorities of the United States with reference to the transfer of the interests of this State in the contemplated improvement of the canal.

This coal region, as is well known to almost every one, is very extensive. In the region where I live it abounds in bituminous coal, but the variety is not so great as here. The principal stratum is about from 6 to 10 feet thick of bituminous coal and is regarded as rating amongst the first class of gas coal. In the neighborhood of the town of Clarksburgh there are several mines now operated by companies sending these coals to the eastern cities.

This coal is sent by the Baltimore and Ohio Railroad to Baltimore, and from thence shipped by water to Philadelphia, New York, and Boston. The charges upon the road are very heavy, something like \$5 per ton from that point to the city of Baltimore, leaving a very small margin to those who operate in the business and to the owners of the coal. Those companies, I think, generally pay what is termed a royalty of 10 cents upon the ton. A ton of that coal is about twenty-eight bushels. This coal extends from here to that section.

It is said that in some neighborhoods there is cannel coal, but I think that is doubtful. It is this main vein averaging about 5 feet in all that region. It is a rolling, hilly country, and the coal lies in horizontal veins, dipping to the west, generally about midway up the hillside. It extends up the Elk River. A survey for a railroad from this point up the Elk, passing near Braxton Court-House by Lewis Court-House and to Clarksburgh, where I live, has been made on the Pennsylvania line. The grade is a very convenient one for making a road, and this coal is found upon nearly every part of the land.

I will mention, perhaps, what might be an item desirable to the committee, that salt water has been discovered up the Elk nearly seventy miles from here, and they are now operating a very fine salt indeed. It is operated by a New York company. I think it is the finest-looking salt I have almost ever seen. It is very fair, and said to be very free from all impurities. I think it is probable that the salt water will be found between that and this, perhaps, along the line of the Elk pretty generally by sinking deep enough for it. Salt has also been found, long since, upon the Little Kanawha on this line of contemplated railroad. It was operated there I suppose as early as 1815. The brine is not equal to the brine here. It has also been found at Clarksburgh. In that vicinity some of the same character has been found, as on the Little Kanawha, at a place called Bulltown.

The works at the vicinity of Clarksburgh have been somewhat abandoned. Salt can be brought there and sold at a cheaper rate than they can afford to make it. They carry it on to a limited degree on the Little Kanawha and also on the Upper Elk country, but the means of transportation does not, of course, justify the owners in operating upon a large scale.

As I stated before, I think it is probable when the Elk Valley, from this point to Braxton Court-House, a short distance, where they have discovered salt—that it will generally be found at perhaps not every point but at different points in the valley of that river. Colonel Floyd,

of the committee, might give you some information as to the subject of timber.

Petroleum is found in a narrow belt, averaging between a mile and three miles wide, running in a direct line from the north to the south, or west of south somewhat. It is found in two neighborhoods. Large quantities are produced. One of the points is at White Oak, and the other is at Burning Springs. The annual quantity I cannot state, but it amounts to perhaps a hundred thousand barrels. Most of it is refined at Parkersburgh and sent to various markets and sold. Some of it is shipped to the different points in concrete state. The yield perhaps is somewhat diminishing, but it is very probable that it will be found in other neighborhoods, if proper exertions are made to develop it.

JOINT RESOLUTION No. 10.—Providing for the transfer of certain rights and franchises of the State of West Virginia to the United States.

Whereas the Congress of the United States recently made an appropriation for a survey to ascertain whether it was practicable to construct a continuous water-line through this State, to connect the waters of the Mississippi Valley with the Chesapeake Bay, and the engineers employed for that purpose have shown that such a line is practicable; and whereas the State of West Virginia regards the said line as a work of national importance, and is anxious to afford every facility for the construction of the same; therefore,

Be it resolved by the legislature of West Virginia:

1. That the State of West Virginia hereby agrees to transfer all the rights, privileges, and franchises now owned or possessed by the State in the Kanawha River improvement, and the chutes, dams, wing-dams, channels, and all other work heretofore done in the Kanawha River, together with jurisdiction in and over the Kanawha River from its mouth to the mouth of Gauley River, and over the New River from the mouth of Gauley to the mouth of Greenbrier River, and over the Greenbrier River from its mouth to the mouth of Howard and Anthony Creeks, and from the mouth of said creeks to the State-line; and also the rights, powers, and franchises to construct, maintain, and operate a good and substantial through water-line from the mouth of the Kanawha River to the Chesapeake Bay, so far as the said water-line shall pass through and be located in this State: *Provided*, That the rights, privileges, and franchises herein mentioned shall never be so exercised as to affect or impair any right now vested in the Chesapeake and Ohio Railroad Company, by or under the laws of this State.

2. The board of public works is hereby authorized to appoint nine commissioners on the part of the State, one to be chosen from each judicial circuit, and five or more of whom may act, to confer and negotiate with any commissioners or persons who may be authorized by law to act for and on behalf of the United States, in regard to a transfer to the United States, of the said rights, privileges, and franchises. Three-fourths of the said commissioners at least shall consent to any contract or agreement that may be proposed touching the said transfer.

3. That the said commissioners shall, as soon as a contract is proposed to them, which they or three-fourths of them may deem acceptable and just, transmit it to the governor of this State, who shall submit the same to the legislature for their action if it be in session at the time, and if the legislature be not then in session, he shall convene it as speedily as possible for that purpose.

4. That the State of Virginia be respectfully requested to take concurrent action in the matter referred to in the foregoing resolutions, and that a copy of the same be sent by the governor of this State to the governor of Virginia, with the request that he lay them before the legislature of that State.

5. That a copy of these resolutions be sent to each of the Senators and Representatives in Congress from this State, and they be requested to lay the same before Congress; and to the governor of the following States: Virginia, Maryland, Ohio, Kentucky, Tennessee, Indiana, Illinois, Missouri, Arkansas, Kansas, Iowa, Wisconsin, Minnesota, Nebraska, Pennsylvania, and North Carolina.

Adopted December 21, 1872.

WM. W. MILLER,
Speaker of the House of Delegates.
D. D. JOHNSON,
President of the Senate.

STATE OF WEST VIRGINIA,

Clerk's Office, House of Delegates, Charleston, October 24, 1873.

I, J. B. Peyton, clerk of the house of delegates, and as such keeper of the rolls, do certify that the above and foregoing is a true and correct copy of a joint resolution, entitled "joint resolution No. 10, providing for the transfer of certain rights and franchises of the State of West Virginia to the United States," passed by the legislature of West Virginia, December 21, 1872, as appears from the records of my office. Given under my hand this the 24th day of October, 1873.

J. B. PEYTON,

Clerk of the House of Delegates, and keeper of the rolls.

OFFICE OF THE BOARD OF PUBLIC WORKS OF THE STATE OF WEST VIRGINIA.

At a meeting of the board of public works, held in the office of the secretary of state on the 15th day of March, 1873, the following gentlemen were selected and appointed commissioners, as required by joint resolution No. 10, of the legislature, at the session of 1872-'73, authorizing the appointment of commissioners to confer and negotiate with any commissioners or persons who may be authorized by law to act for and on behalf of the United States, in regard to a transfer to the United States of the rights, privileges, and franchises now owned or possessed by the State in the Kanawha River improvement, viz: A. J. Pannell, from the first judicial circuit; James Morrow, jr., from the second judicial circuit; William H. Travers, from the third judicial circuit; Charles F. Scott, from the fifth judicial circuit; Jonathan M. Bennett, from the sixth judicial circuit; William A. Quarrier, from the seventh judicial circuit; A. T. Caperton, from the eighth judicial circuit; and John Douglas, from the ninth judicial circuit. And at another meeting of said board, held at the same place, on the 19th day of March, 1873, James D. Armstrong was appointed from the fourth judicial circuit.

C. HEDRICH,

Secretary of the State and ex officio Secretary of the Board.

Col. GEORGE R. FLOYD:

Mr. Chairman, if the knowledge of the wild country which lies south of here, in the valley, would be of any service to the committee I could perhaps give some information upon that point. I am entirely familiar with the valley of Coal River, tributary to the Kanawha, ten miles below, where it comes into the valley. It is an extensive valley that is probably a hundred miles, or, I would say, at least sixty miles wide; it is a water-shed. It has as fine timber upon it as any valley in West Virginia, having poplar, oak, black-walnut, white-walnut, and other hard woods. It is almost untouched. The farther you go south the heavier are the coal-fields.

By the CHAIRMAN:

Question. Heavier than here?

Answer. Yes, sir; probably the Kanawha gentlemen will excuse me in saying that it is heavier. After you leave that valley you fall into the great valley of the Guyandotte, which empties into the Ohio just here, which is a hundred and fifty miles long and has a water-shed of one hundred miles at its head, or source. It takes rise in the Cumberland range of mountains. It is a wilderness. It has also timber of the same character. The mountains are larger as you go in that direction; they are higher. There are more veins of coal above water level in the mountains, and they are closer to the water's edge as a general thing, than these at Coleburgh. They have the cannel coal. There is a vein of from 4 to 5 feet thick that passes generally through the country there. It does through the Guyandotte Valley, the principal portion of the valley, particularly about Logan Court-House, and that portion of the country which is about seventy-five miles from the Ohio River. That forest, you may say, is untouched as yet. It is a wilderness. You then pass from that to the Great Sandy Valley, a third fork known as the Tug Fork, the dividing line between Kentucky and West Virginia at pres-

ent. It takes its rise also in Tazewell County and spreads all along that region. It forms a river at Louisa. Twenty-five miles from the Ohio River there is what is called the Louisa Fork, running parallel with the Sandy. It takes its rise in this same range of mountains, just where the Clinch River and the Tennessee water sets in, and its water-shed is about the same. In fact, that water-shed extends to where the Kentucky River water-shed sets in under the Cumberland range. There is the Little Sandy and the Licking opposite Cincinnati. Those two streams come in between the Sandy Valley and the Kentucky Valley and pass on to the Ohio. I am not familiar with the country after you pass on to the Licking waters.

I have been all through the other region. It abounds in coal of the most superior character, cannel coal, bituminous, and splint. The largest veins of bituminous coal which I have ever examined and measured myself are 12 feet thick. The largest of the cannel coal is 5 feet thick, and the largest of the splint coal is 6 feet thick. All these streams have their tributaries, which pass out, and it seems that the country is formed nearly on a level. For instance, the Sandy River, which has been carefully surveyed for the first seventy miles up that stream, has only one foot and three inches of fall to the mile. It grows a little more rapid for the next twenty-five miles, and then about a hundred miles from its mouth there is this same cliff, or gorge, which passes through, but nothing like to the extent of the one which you have just passed here to-day on the New River. There is what we call the roughs of the river. They are not more than nine miles long on the Guyandotte River, and probably about the same on the other. Then the basin of the county of Wyoming comes in like the Upper New River and Greenbrier do here. Upon the falls upon the Tug River comes in the McDowell basin, that spreads out with its streams which are capable of floating timber, and is not so rapid by any means as it is in these roughs. It seems to take another step there. Then you pass on about fifty miles and you come to the summit of the Cumberland Mountains, and there you meet the Tennessee or the Clinch River, that passes on. In this direction comes the New River water, that makes the basin clear on to the Blue Ridge, dividing this east and west.

There is the finest iron-ore on the head of the New River, right upon its banks, which is probably known in the world. I am not an iron man or master, and never dealt in that sort of thing, but I have paid a good deal of attention to it. I know of a vein 6 feet thick on the banks of the New River.

W. F. GOSHORN, president of the Kanawha River board, examined:

By the CHAIRMAN:

Question. State, if you please, the history of the improvement by the State of Virginia and by the State of West Virginia, as the successor of the State of Virginia, of the Kanawha River, and the amount of tolls levied, &c.

Answer. I can only tell you for the last two or three years. I have only been in the board about three years.

Q. When were these improvements made?

A. They were commenced in about 1822, I think.

Q. By the State of Virginia?

A. Yes, sir.

Q. By what law? Were they levied by act of the State of Virginia?

A. Yes, sir.

Q. Have you ever heard of any act of Congress authorizing it?

A. I have not.

Q. Was the Kanawha regarded as a navigable river, or have you ever heard that question discussed?

A. No, sir, I never have.

Q. What is the amount of tolls levied?

A. The aggregate is about \$15,000 a year.

Q. What has been done with that money?

A. It is expended on the river.

Q. It is a mere mode of collecting a tax for the improvement of the river?

A. Yes, sir.

Q. Have you ever heard of its being called in question—I mean as to its legality?

A. No, sir; I never have.

Q. Can you state how many days of the year the Kanawha is open to navigation?

A. Some years it is open all the time—the whole of the year.

Q. Is it in any way impeded by the lowness of the water; how many days is navigation prevented by the shoalness or lowness of the water?

A. The small boats always run. For years it has never happened that they have not come up.

Q. What is the draught of these boats?

A. They draw about 2 feet.

Q. How many months in the year is it open to the navigation of the smaller salt-boats?

A. I suppose an average of eight months in the year—from seven to eight months would be an average.

Q. How many months is it open for the navigation of the coal-barges carrying four hundred tons?

A. I suppose seven or eight months on an average, taking a series of years. There is more water in this river in the low water than in the Ohio. They can go down here when they cannot in the Ohio.

Re-examination of Judge CAMDEN:

Mr. Chairman, I omitted the fact, in connection with salt on the Elk, which perhaps may be of service in regard to the investigation now before the committee, that salt has been made from the natural flow of water at Webster Court-House, on the Elk, about forty miles above the point at which I stated that this New York company were manufacturing salt. It has been made from the flow of water without sinking.

By Mr. DAVIS:

Q. Where does the Elk empty into the Kanawha?

A. Just below this place—at the lower end of Charlestown.

Examination of M. F. MAURY.

By the CHAIRMAN:

Question. Please state to the committee any information you have in reference to iron-ore on the line of this proposed canal.

Answer. I have just returned from an expedition along the region of iron-ore from Lynchburgh up. Beginning at Lynchburgh you come into a belt of magnetic ore which is very rich, and is as high as sixty-eight or seventy. A great deal of it will run up to sixty-seven or sixty-eight. From there you come along up to the mouth of North River,

and a half a mile up you come to the brown hematite banks, which are worked by the Powhatan Iron Company, six miles above Richmond. They have been worked for a great number of years. Their work is surface-deposits, but they have been worked down so far that they have had to begin tunneling. You go up that river still about three miles farther and you come to Mr. Brady's iron-works. He also ships to the Powhatan Iron Works Company. From there up two and a half miles you come to the old Buena Vista banks, working under ground five separate deposits, very heavy on the surface. The surface ore is so rich that they could very well afford to take it all to the canal-boats and ship it bodily down. But they have been working on the one nearest to the canal. They began on the surface and finally got down about 60 feet. That is shipped down to eighteen miles above Lynchburgh and there worked it up. The iron made from that produces a number one American pig-iron, which brings \$48 a ton. The principal market is Baltimore, it going down the James River to Richmond. Above that you come to the old Buena Vista furnaces, where an ore-bank was worked very many years ago, but the timber has been principally cut off the land now and that furnace is entirely out of blast. They get along there to calcareous marl, which is used altogether in the place of limestone. It is fine and mixes very readily with iron ore in the furnaces. That Buena Vista ore takes about a hundred and sixty-five bushels of charcoal to make a ton of pig-metal. There are very many other deposits in Rockbridge County which were not at all worked, principally of the brown hematite variety.

Going up the James River you pass by numerous furnaces which have been worked in by-gone years; some are now going again into operation, being principally purchased or leased by men from the North.

As you go up Alleghany County you come into the old Lucy Selina and Australia banks; they are worked by the Longdale Iron Company. They have a seam there of the same brown hematite 25 feet thick. They have worked it down 300 feet into the earth, and still have the ore as heavy as ever below them, and have traced it over the surface for three and a half miles continuously, with outlying spurs many miles farther.

By Mr. DAVIS:

Q. What was the per cent.?

A. On the last blast of the Lucy Selina furnace they tapped 48.07. It is a very remarkable instance that they only used seven pounds of limestone to the one hundred pounds of ore for the flux. That is half what is ordinarily used. They did run it down to five, and made a fair iron, but found seven pounds was the best they could use. That is very hard-working ore, and they want red hematites or fossiliferous or magnetics, or, better still, ail, to mix and make it work easily in the furnaces. It chills the furnace so that they have a great deal of difficulty in getting it to work.

The analysis shows no zinc in it, but there is a very heavy ring of zinc formed around the throat of the furnaces on every blast, and it is to that they attribute the bad working of the ore. It makes a quality of pig-metal that rates No. 1 charcoal. In fact, it is a charcoal-iron. It was selling in Baltimore at the time I was there, in August, for \$56. They have succeeded so well with the old Lucy Selina furnace, producing six or seven tons per day, that they have now torn that down and put up a new one producing from ten to twelve tons, intending to use charcoal in the summer when the roads are good, and in the winter to

use Kanawha coal when the roads are bad. They have to haul that iron about seven miles to the railroad.

From there up there is a large mine run by Mr. McClure. His father is the superintendent of the Buffalo Gap Steel and Iron Works, this side of Staunton, and there are three other banks opened in that immediate vicinity. Coming from there west you are still on the line of the ores, but very little has been looked into them on that point.

By the CHAIRMAN :

Q. What is the difference in the relative value between charcoal-iron and pig-iron made from coal ?

A. Taking it as a general rule, charcoal-iron is the most valuable.

Q. How much more than the other ?

A. I think charcoal-iron is now rating at about fifty-nine or sixty dollars in the New York market, and I think that No. 1 Scotch, which is made from coke, I believe, was \$48 at the last quotation. Those were last Tuesday's rates.

Q. How much is the pig-iron worth, made from ordinary coal, without coking ; what kind of coal do you use ?

A. It is a splint coal which makes the iron without coking, and it produces an iron which many claim is equal to charcoal-iron. Some say that it is just a little bit inferior.

Q. There is some difference, of course, in the price between charcoal-iron and the iron made from coke ?

A. Yes, sir ; charcoal-iron ranks highest as used for car-wheels and other purposes, requiring toughness.

Q. To what extent have forests along these iron mines been used up ?

A. At some of the furnaces they have been entirely cut off. Some few of these furnaces have been too far from the wood. The old Buena Vista stopped many years ago, and the secondary growth is almost heavy enough to be used. It has been out of blast for fifteen years. At the Anderson furnace, above the mouth of the North River, on the James, I am told that the timber has been very much cut off.

Q. Can you state how many acres of woodland is usually consumed in running a blast furnace for a thousand tons of iron, or thereabouts ; can you give me any relative proportions ?

A. A cord of wood makes forty bushels of charcoal, and a furnace producing six or seven tons a day uses up two hundred acres of ordinary Virginia forest.

By Mr. CONKLING :

Q. You spoke of the necessity of mingling ores. Will you state a little more particularly why it is desirable to mingle those ores ?

A. It is not desirable in all cases to mix all the ores. You have to take an analysis of them all, and have to see how they will act. The different ores will contain different materials, some less phosphorous, and some less sulphur, and these different elements will neutralize each other, and will produce a neutral iron of a better grade.

Q. That is your general remark. My question referred to the particular theater of which you were speaking. You spoke of a furnace, saying they needed to mix with it red ore and some other ore, or, better than any, all of them. I wish to ask you for information in that particular case. What is the difficulty of that ore, and what do you accomplish there by this mingling of other ores ?

A. The main result which you accomplish is that by the mixture of them, if one, for instance, has a deleterious substance in it, and another

a substance in it which will remove and neutralize it, it is, therefore, clearly best to mix those.

Q. That is very apparent; but I was seeking to learn, if I could, in that particular case, what was the quality and nature of the ores they used, and in what it was wanting, and which of these other ores supplied them?

A. The quality which injures that more particularly is the presence of the zinc in it, so I am told.

Q. And the purpose of this mingling of ores is to neutralize that zinc?

A. Of course, if you take half a ton of that ore and half a ton of another and mix them there would be less zinc in that mixture.

Q. You mean that that is the necessity which there exists?

A. Yes, sir.

Q. Does the iron chill in consequence of the zinc?

A. It chills the furnaces; it is extremely refractory; it is extremely hard to smelt down. At least that is the explanation that they made there of the chilling of the furnace. They laid it all to the zinc, and I myself saw nothing else in the analysis which was shown to me that would affect it.

By Mr. SHERMAN:

Q. What is the cost of manufacturing pig-iron at the furnaces, without regard to the transportation from the furnaces—say, near Lynchburgh?

A. At those furnaces which I visited they were rather unwilling to give me any details of the cost, but, as near as I can learn, their charcoal-iron now costs them from twenty-five to twenty-seven dollars a ton. They expected to do it very much cheaper when they could get Kanawha coal.

Q. Do they use any coal at any of those Lynchburgh furnaces?

A. No, sir; charcoal entirely. They would have to bring their coal up from the Richmond coal-field and have it coked; but I do not know of a single furnace in that region that uses any coal at all except charcoal; that is along the line of the proposed canal. Now they have two furnaces, both this side of Staunton, using Kanawha coal. One is the Elizabeth and the other is the Buffalo Gap Steel and Iron Company. They use Coleburgh coal so much that they have erected another furnace. The manager told me that he used mostly Kanawha coal and a little bit of charcoal. At one time he got out of charcoal, and had to run on the Kanawha coal, and he found it took from one and three-quarters to two tons of the raw coal to make a ton of metal.

Q. Is there any furnace running in West Virginia in this part of the country now?

A. No, sir; there are several projected here in the valley.

Q. Where have they tried the splint coal in this valley to produce pig-iron?

A. Newport, Ky., Ironton, Ohio, Wheeling, W. Va., and also Martiusville.

Q. Has it been pronounced a success?

A. The Mendenhalls, who tried it in Wheeling, said it was superior to any coal of which they had knowledge in the Alleghany coal-field, and that it made a quality of iron which brought the highest price. Also the furnace of Newport, Ky., gave me details of a week's run, using Hamill's Creek coal with Connellsville, Pa., coke, using the Missouri Mountain ores as their ores to get the iron. Of that mixture of fuel it only took one and three-quarter tons to produce a ton of pig-

metal, and it would take of coke from three to three and a half tons of all bituminous to produce about the same results. They also tried it at Ironton, but they came to the conclusion that the Ashland coal was much nearer and they preferred using that.

Q. What is the quality of Ashland coal; is that a splint coal?

A. I have never seen it.

Q. They make pig-iron with that without any coke, do they not?

A. Yes, sir. The Low Moor Iron Company, situated in Clifton Forge, is preparing to ship iron-ores to the West. They are going to ship them extensively down to Ashland to have them practically tried in the furnace, to see what they are good for and what they will bear; but I think they intend to continue to ship them steadily down there, occupying the position for the East which the Missouri mountain iron does for the West. It is certainly the intention of all of these ore-regions in that portion of Virginia to ship iron here to the coal. That seems to be the universal rule in almost all iron-producing districts—that the iron goes to the coal, rather than the coal to the iron. You have undoubtedly noticed that there was a furnace on New River which was being put up, and there is a contemplated furnace now going up at the mouth of Davis Creek. It is not going up at present, but the company intends to locate it there. The ores for that purpose will come from the East. Cyrus Mendenhall, who is one of the owners of the furnace in Newport, Ky., has recently bought both coal and bottom land on the river, some twenty-five acres, for the erection of his furnace and rolling-mills.

Examination of B. W. BYRNE, State superintendent of free schools:

Mr. Chairman, I have not heard the statements of all the other parties, and I do not like to go over the same field again. My intimate acquaintance, however, with the country that would fall into this line is mainly on the northeast side of the New River. I believe I am intimately acquainted with all the tributaries that fall into the Great Kanawha and New Rivers from that southeast side. I should regard the timber as one of the most important items in the development of a great improvement, such as you speak of, and mainly owing to the fact that I have seen it stated, and I believe from what I know of the history of the country, and of the timber in the country, that there is almost one-half of the entire surplus hard-wood of the whole country in West Virginia. It is believed by some who have written on the subject, and who have examined the question, that half of the entire surplus hard-wood, which is not necessary for use in the particular locality, is situated in this State.

It so happens that the northern portion of this State is the improved part of it, and that almost all, or three-quarters of the surplus hard-wood even that is in this State would fall into this line. The Elk River runs off, not at right angles with the Kanawha, but it runs through a distance of about two hundred miles, heading against that great Cumberland chain, which is called by half a dozen different names, between the head of the Elk and the head of the Tennessee waters. All that country falls into this Kanawha Valley. I suppose that there is eight-tenths of the country south of the Baltimore and Ohio Railroad and southwest of the Baltimore and Ohio Railroad that is yet in the native forest, eight-tenths of the entire area of the State. That is covered mostly with hard-wood, and in addition to that, excepting some in Kentucky, and some in Tennessee, and probably the mountain part of Georgia, there is not very much surplus hard-wood, I am told, in any of the States. Even Ohio has no very great surplus, it has been said. The

pine timber or the softer timbers predominate in other sections of the country. Now, if a great line of this kind has the timber, which is being gradually exhausted, I should think that the Atlantic slope would command more of the timber, that there would be more demand for it on that slope than in any other part of the country. I should regard this communication as a very important one, both East and West. Still the present communication West is ample for carrying timber, because all these rivers that are not navigable for boats, timbers can be brought down in the logs ready for the sawyer, and it has so diversified and cut up the streams all over this West Virginia country that you can scarcely find a tree which you could not get into a stream that would float it in the distance of a mile until you get on to the Alleghany region, where the mountains take a different direction. They are there sometimes pretty broad between the streams, so that all the timber gravitating toward this stream is accessible pretty nearly at a small cost. It is a very rugged country almost everywhere, and there is very little level land, but it is all good land.

Coal underlies, as has been stated by Professor Ansted, all the lands out of which the tributaries of this river flow up to this great chain of mountains, running from the Tennessee waters to the waters putting into the upper Ohio, and for a width even greater than he spoke of. There are one or two very fine coal seams farther down the river than this.

Adjourned.

CINCINNATI, OHIO, *Monday, October 29, 1873.*

The committee met pursuant to adjournment.

Statement of Richard Smith, esq., of the joint committee Chamber of Commerce and Board of Trade of Cincinnati.

Mr. Chairman, the estimated value of the commerce of the Ohio River between Pittsburgh and Cairo, nine hundred and sixty-seven miles, in 1868, prepared by Milner Roberts, United States engineers, who had charge of the river, is as follows:

Pittsburgh, Pa.....	\$150,000,000
Wheeling, W. Va.....	30,000,000
Pomeroy, Ohio.....	8,000,000
Ironton, Ohio.....	5,000,000
Steubenville, Ohio.....	8,000,000
Portsmouth, Ohio.....	12,000,000
Maysville, Ohio.....	8,000,000
Ripley, Ohio.....	5,000,000
Cincinnati, Ohio.....	170,000,000
Madison, Ind.....	12,000,000
Jeffersonville, Ind.....	5,000,000
Louisville, Ky.....	15,000,000
New Albany, Ind.....	15,000,000
Evansville, Ind.....	12,000,000
Wabash River, Ind.....	15,000,000
Smithland, Ky.....	30,000,000
Paducah, Ky.....	40,000,000
Cairo, Ill.....	20,000,000
354 other points.....	156,000,000
	<hr/> 716,000,000

Value of imports and exports by railroad and river at Cincinnati, Ohio.

Year.	Imports.	Exports.
1870.....	\$312, 978, 665	\$193, 517, 690
1871.....	283, 796, 219	179, 848, 427
1872.....	317, 646, 608	200, 607, 040

Quantity of some of the principal imports, chiefly by river.

Year.	Cotton.	Coal.	Salt.
	<i>Bales.</i>	<i>Bushels.</i>	<i>Bbls. & sacks.</i>
1870.....	153, 639	30, 300, 000	289, 394
1871.....	230, 411	22, 972, 000	258, 095
1872.....	122, 128	30, 790, 795	347, 463

IRON.

Year.	Tons.	Pieces.	Bundles.	Pig, tons.
1870.....	71, 955	148, 403	34, 245	53, 668
1871.....	67, 591	89, 561	9, 459	56, 758
1872.....	79, 961	134, 670	10, 569	112, 753

TOBACCO.

Years.	Hhds.	Bbls.	Boxes.
1870.....	46, 563	9, 961	53, 961
1871.....	56, 283	9, 083	61, 497
1872.....	45, 877	11, 176	59, 535

Those are figures obtained by the chamber of commerce, which corrects the statistics daily of the imports and exports, but you will discover a large excess of imports over exports. A large amount of exports go out from here by wagons, and in all sorts of ways, of which there is no mode of keeping account. That is the explanation of the exports being much less than the imports. We collect the imports more thoroughly, getting the manifests of the steamboats and railroads.

By Mr. SHERMAN:

Question. Where are the details of that statement to be found?

Answer. In the report of the chamber of commerce, a copy of which I can place in your hands.

Q. How many pounds are there in a hogshead of tobacco?

A. It varies from 1,200 to 2,200 pounds.

Average rates of freight, on fourth class, to the points named during 1872.

Points.	Rail.	Water.
	<i>Cents.</i>	<i>Cents.</i>
To New York	45 to 60	20 to 25
To Pittsburgh	25	10 to 15
To Louisville	10 to 18	20 to 25
To Saint Louis	30	25 to 40
To Memphis	30 to 66	30 to 50
To New Orleans	45 to 93	

Statement of freight carried by the railroads terminating at Cincinnati.

Year.	Local.	Through.
	<i>Tons.</i>	<i>Tons.</i>
1870	3,284 883	2,577,887
1871	4,005,536	2,329,315
1872	2,725,574	4,490,788

Value of manufactures of Cincinnati, with cash capital invested, and value of real estate occupied.

Year.	Value of products	Cash capital.	Value of real estate.
1870	\$127,459,021	\$51,673,741	\$37,124,119
1871	135,988,365	50,520,179	40,443,553
1872	143,486,675	55,265,129	45,164,954

When we have no water the rail rates are much higher. These rates are compared when the river and rail are both running. Sometimes we have no river, and then the railroads charge whatever they please, and generally block up so that they cannot carry freight at all. They block up and give notice that they cannot take freight beyond a certain point, say from beyond Louisville or Nashville.

Tonnage and value of boats enrolled at the port of Cincinnati, Ohio.

Year.	Tonnage.	Value.
1870	53,130.96	\$1,727,090
1871	68,667.59	2,734,700
1872	73,604.54	3,331,000

Tonnage built in Cincinnati.

Year.	Tonnage.	Value.
1870	20,838.60	\$845,000
1871	12,774.59	883,800
1872	16,312.40	700,400

Tonnage of steamboats and barges running between Cincinnati and other ports in 1870, 1871, and 1872.

	Tons.
1870.....	78,109
1871.....	81,808
1872.....	85,712

Number of arrivals and departures at the port of Cincinnati of steamboats, no record being kept of arrival or departures of barges.

Year.	Arrivals.	Departures.
1870.....	2,712	2,726
1871.....	2,377	2,356
1872.....	2,671	2,235

The facts presented show the magnitude of the river-trade, and the importance of improving the navigation of the natural water-channels. Upon these the country must chiefly rely for protection against high rates of freight. Whatever the Government may do in the way of regulating railroads, the public will be compelled to rely chiefly upon the great and most reliable regulation—competition.

An eminent United States engineer, being fully informed as to the magnitude of the commerce of the Ohio River, stated that it would require two double-track railroads, one on each bank, to move the property passing over that stream. A few facts will illustrate this proposition: There is received at Cincinnati for consumption at this place and points below, annually, 75,000,000 bushels of coal. To carry this by rail would require fifty trains per day, each train consisting of fifteen cars. The cost of moving coal by river averages from five-eighths to seven-eighths of one mill per ton per mile. The cost of moving fourth-class freight by rail, for long distances, is from 12 to 15 mills per ton per mile.

The cost of bringing coal to Cincinnati by rail, last winter, was 7 mills per ton per mile. What the charges for transporting coal on eastern railroads is we are not prepared to say, but it is doubtless much less than on roads centering at Cincinnati, the latter not being prepared to do a coal business. Anthracite coal, however, can be moved much cheaper than bituminous, a ton of the former being much less in bulk than the latter. The risks of navigation are also in favor of rail traffic; but still, locomotives cannot compete with water in moving heavy freight, nor could this business be done at all by rail without an enormous increase in railroad facilities. As stated, it would require a double-track railroad to move the coal alone, and then at an increased cost that would be a severe tax upon consumers.

But coal is only one item. The value of the coal received at and passing this point, at 15 cents per bushel, is \$11,250,000, whereas the total commerce of the Ohio River is \$716,000,000. This is greater than the total foreign imports of the United States for 1872-'73, the exact amount of the latter being \$663,410,597. Iron is now a large item of our river commerce—not only crude and manufactured iron, but iron-ore. The latter is brought into and up the Ohio River from Tennessee, Alabama, and Missouri, and being mixed with Ohio, Kentucky, and Virginia ores, is smelted, producing an excellent article of metal. This is so much better than iron manufactured from one class of ore that

metal smelted from mixed ores is sent back to Saint Louis from the Ohio River. The cost of moving iron-ore up the river is an average of 4 mills per ton per mile.

The average cost of freight from Cincinnati to New Orleans is $3\frac{1}{2}$ mills per ton per mile. Of this ten per cent. is charged for passing through the Louisville and Portland Canal, an improvement now owned by the United States, with the exception of five shares, of the nominal value of \$100 each, held by trustees, who run a bank upon the income of the canal. Congress is tardily approaching the point of taking possession of this improvement and reducing the tolls to a point sufficient to cover expenses, but it is feared that the commerce of the Ohio River will suffer the imposition of an exorbitant tax another year before the rightful owner takes possession of the works.

An impression prevails that for transportation purposes the natural water-channels are diminishing in value and importance. The figures presented are sufficient to dispel this idea. Important as railroads are, the cities located on the water-channels, if these were destroyed, would languish and die. Besides, as the products of the Ohio Valley increase, and as the products of the West increase, rivers will grow in importance. What is called cheap transportation is not possible by rail. It is possible by river, and to these channels attention must every year be more and more directed, for the movement of heavy freight, including grain and provisions.

Furthermore, if your committee will pass down the Ohio River, you will discover millions of acres of good lands uncultivated. This, when farmers discover the folly of going to the far West, where corn, worth 50 cents per bushel in this market, is used for fuel, will be cultivated, and the products will swell the already large volume of trade passing up and down the river.

The object of the facts and suggestions thus presented is not to indicate the mode of improving or extending water communications, but to impress your committee, and through you the Congress of the United States, with the importance of water-channels. Not by rail alone, but by water and rail, can cheap transportation be secured.

By Mr. SHERMAN :

Q. What kind of boats are those referred to ?

A. Steamboats, barges, and everything registered at the custom-house. You will understand that the coal brought to Cincinnati is brought in barges and towed. Tow-boats tow from 100,000 to 500,000 or 600,000 in a single tow, bringing it down by the acre. The cost of towing coal here, as we have it, is seven-tenths of a mill per ton per mile.

Mr. Daniel C. Torrance, of Saint Louis, now living in New York, informed me that he carried coal from Washington, Ind., to Cincinnati, at 6 cents per bushel, on condition that the owners of the mines would sell it here at 13 cents.

Coal was then selling at 20 cents a bushel in Cincinnati, and he thought that if he was going to carry it cheaply for them he wanted the consumers to have the advantage of it, and made the rates 6 cents per bushel for transportation.

By Mr. DAVIS :

Q. I understand you Mr. Torrance told you so. Was it actually done ?

A. Yes, sir ; it was done ; but I will state that it was not done to a very large extent. And you will observe that in my report I have said

that none of our railroads are prepared for carrying coal, and they only carry coal during famines, when the river is frozen up so that we cannot get it by that route.

By Mr. CONKLING :

Q. Is the grade of that road to which you referred as carrying coal so cheaply exceptionally easy; is it level and straight?

A. No, sir. In reference to iron, I will say that they bring the Iron-Mountain ore and mix it with our ores, and the metal is so much better for some purposes than the original metal that they ship it back to Saint Louis and it is there manufactured.

The following resolutions have been adopted by our committee, and I am instructed to present them to the United States Senate committee :

That the rapid development of our Western States and Territories, and the increasing demands of commerce, require enlarged transportation facilities and lower rates of freight between the West and the sea-board.

That no matter how many through lines of railroad may be constructed, nor how easy the grades, they can never successfully compete with water communication, nor meet the future wants of the country.

That these requirements of commerce can only be fully secured by improving our rivers, enlarging our canals, and constructing one great central water-line between the Ohio River and tide-water.

That we believe it to be the duty of the General Government to improve our navigable rivers, and to construct this great central water-line, under the supervision of its own officers, and to remain under the control of the Government.

The improvements referred to, if carried out, would naturally stimulate competition in the carrying-trade of the country, and thus secure cheap transportation.

BENJ. EGGLESTON,
RICHARD SMITH,
THOS. SHERLOCK,
Chamber of Commerce.
JNO. J. HENDERSON,
P. P. LANE,
ALEX. McDONALD,
JAS. J. HOOKER,
C. OLHATER,
Board of Trade.

The following statement, showing the extent of the Ohio River trade in detail, was prepared by Milner Roberts, United States engineer, who went along the river and procured statistics from each point :

Summary statement exhibiting the general character and estimated value of the river-trade and commerce of the cities, towns, and principal landings along the Ohio River.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Pittsburgh, Pa. ....	.....	Iron, coal, lumber, oil, and general manufactures.	Cotton, iron-ore, grain, &c.	\$150,000,000	See App. A.
Saw-mill Run.	1.5	Coal and salt.	Lumber, &c.	2,000,000	Coal, railroad, and iron mills.
Manchester.	1.5	Steamboat hulls and salt.	Lumber, copper, and iron-ore.	1,500,000	Ship-yards, &c.
Glass House, Pa.	2.2	Refined oil.	Crude oil.	100,000	Refineries.
Harbaugh Furnace.	3.0	Refined oil.	Iron-ore and metal.	200,000	Furnace & works.
Chartier's Creek.	3.4	Hulls and lumber.	Saw-logs.	10,000	Ship-yards, &c.
Ardesco Oil Works.	3.9	Refined oil.	Crude oil.	150,000	Oil refinery.
Pork House.	4.2	Iron. ....	.....	50,000	Rolling-mill.
Middleton.	11.5	Lumber.	Saw-logs.	20,000	Steamboat and barge hulls.
Shonsetown.	15.0	.....	Lumber.	25,000	Do.
Brick Works.	16.7	Ornamental building blocks.	.....	10,000	Brick works.

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Little Sewickley...	17.0	Steamboat hulls, boats, &c.	Lumber.....	\$5,000	Ship-yards, &c.
Economy	18.0	Manufactures, fruit, &c.	.....	5,000	Independent colonists.
Baker's Landing...	23.3	Building and curb stone.	.....	5,000	Quarries.
Freedom	24.0	Refined oil, &c....	Crude oil and lumber.	60,000	Refineries and all kinds of hulls.
Rochester.....	25.5	Copper, iron-ore, &c., iron implements.	Logs, iron, &c....	3,400,000	Erie Canal trade, &c.
Phillipburgh.....	25.5	.....	.....	25,000	.....
Fire-Brick Works..	27.0	Fire-brick and building stone.	.....	20,000	Quarries and fire-brick works.
Montgomery's Isl'd.	31.9	Building and curb stone.	.....	2,000	Quarries.
Industry	33.5	Steamboat hulls and boats.	Lumber.....	10,000	Ship-yards, &c.
Shipping Port....	34.8	Coal	Groceries and dry goods.	25,000	Coal-mines.
Smith's Ferry.....	40.0	Crude oil and whisky.	.....do	500,000	Oil-wells.
Georgetown.....	40.0	.....	.....	6,000	.....
Liverpool, Ohio...	44.0	Earthenware	Coal, &c	150,000	Numerous earthen works.
Walker's Ldg., Ohio	46.0	Earthen pipe and ware.	.....do	100,000	Do.
Wellsville, Ohio....	47.9	Steamboat hulls and machinery.	Lumber, coal, &c.	100,000	Boat-yards and shops.
Brooklyn, Va	50.6	Hulls	Lumber	10,000	Saw-mills.
New Lexington, Va.	53.0	Baled hay and country produce	Dry goods and groceries.	15,000	.....
Port Homer, Ohio..	53.5	.....do .....	.....do	10,000	.....
New Cumberland, Va.	56.0	Fire-brick and clay ware.	Coal	250,000	Extensive fire-clay works.
Black Horse Land'g	58.0	.....do .....	.....do	100,000	.....
Freeman's Landing.	59.0	.....do .....	.....do	100,000	Do.
Cables Eddy, Ohio	65.0	.....do .....	.....do	10,000	Mines.
Steubenville, Ohio..	67.5	General manufacturing.	Lumber, coal, and general freight.	8,000,000	Manufacturing.
Coal Works, Ohio ..	73.0	Coal .....	.....	50,000	Coal-mines.
Wellsburgh, Va....	73.8	Paper, glass, cotton, and woolen goods.	Dry goods and groceries.	300,000	Coal-mines and manufacturing.
Bush Run, Ohio....	78.7	Country produce..	Dry goods, &c....	10,000	.....
Warren, Ohio	80.8	Grain, &c.....	Dry goods	15,000	.....
Short Creek, Va	80.8	.....do .....	.....do	5,000	.....
Ohio River Coal Co.	83.0	Coal .....	.....	60,000	Extensive works.
Deep Run, Ohio....	84.0	Whisky.....	Grain	5,000	Large distillery.
Slacktown, Va	87.5	Coal .....	.....	10,000	Mines.
Martinsville, Ohio..	88.0	Iron manufacturing, &c.	Iron-ore, pig metal, and coal.	200,000	General works.
Wheeling, W. Va ..	90.0	Coal, iron, nails, glass, &c.	General freight...	30,000,000	See App. B.
Bridgeport, Ohio ..	90.0	Coal and lumber ..	Lumber.....	100,000	Mines & saw-mills.
West Wheeling, Ohio.	91.0	Paper, coal, barges, &c.	Lumber, produce, &c.	15,000	Mines, saw-mills, &c.
Richietown, Va	91.5	Glass and iron	Ore and pig metal.	50,000	Large iron and glass works.
Benwood, Va	93.8	Iron and nails.....	Pig metal, &c....	150,000	Large iron-works.
Bellaire, Ohio	93.8	Produce and railroad transfer.	Produce	175,000	.....
Belmont Coal Works	94.5	Coal .....	.....	160,000	Numerous and extensive mines.
Wegge Coal Works, Ohio.	98.0	.....do	Groceries and dry goods.	50,000	Extensive mines.
Limestone Quarries, Ohio.	99.1	Limestone .....	.....	5,000	Quarries.
Moundsville, W. Va	101.0	Coal and produce..	Groceries and dry goods.	50,000	Mines, Ohio side.
Mineral Hill Coal Works.	104.0	Coal .....	.....do	30,000	Mines.
Powhatan, Ohio....	110.7	Flour and produce.	.....do	15,000	Flour-mills.
Big Run, Ohio	110.8	Whisky	Grain	5,000	Distillery.
Hornbrook's Landing, Va.	113.0	Produce	Dry goods and groceries.	15,000	.....
Whiskey Run, Va..	116.0	Whisky	Grain	50,000	Distillery.

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Sunfish, Ohio.....	116.8	Tobacco, flour, and produce.	Grain, coal, dry goods, &c.	\$100,000	Flour-mills, &c.
Proctor's Run, Va..	121.0	Lumber, staves, and produce.	.....do.....	20,000	Saw-mills, &c.
Bearsville, Ohio....	125.5	Flour.....	Grain, dry g'ds, &c.	20,000	Flour-mills.
Martinsville, Ohio..	127.0	Ship building, lumber, &c.	Lumber, grain, dry goods, &c.	20,000	Saw-mills.
Sardis, Ohio.....	130.4	Lumber, produce, and steamboat, hulls.	Dry goods and groceries.	10,000	Do.
Lodi and Narrows Run, Ohio.	131.6	Grindstones and cooper stuff.	.....do.....	10,000	Quarries, &c.
Barnes's Run, Ohio.	132.4	Yellow pine and cooper stuff.	.....do.....	10,000	
Whitten's Landing, Ohio.	134.7	Produce and coop'r stuff.	Dry goods and groceries.	10,000	
Sistersville, Va....	136.0	Oil-barrels, flour, and produce.	.....do.....	50,000	
Terrell's Landing, Ohio.	136.4	Tobacco and produce.	Coal.....	10,000	
Centerview, Ohio..	139.0	.....do.....	.....do.....	15,000	
Matamoras, Ohio..	141.5	Flour, produce, tobacco, cooper stuff, &c.	.....do.....	65,000	Mills, &c.
Grandview, Ohio...	142.2	Oil-barrels, flour, and produce.	.....do.....	20,000	Do.
Landing, Va.....	142.6	Lumber.....	.....do.....	2,000	Saw-mills.
Johnson's Landing, Va.	144.5	Country produce..	Dry goods and groceries.	5,000	
Union Land'g, Ohio.	145.2	Barrels, &c.....	.....do.....	2,000	Cooperage.
Wells's Land'g, Va.	146.4	Country produce..	.....do.....	2,000	
Rea's Run, Ohio....	150.3	Produce and coop'r stuff.	.....do.....	10,000	Cooperage.
Landing, Va.....	151.8	Country produce..	.....do.....	5,000	
Saint Mary's, Va...	154.5	Cooper stuff and ship building.	.....do.....	30,000	Ship-yards and cooperage.
Newport, Ohio.....	155.5	Cooper stuff and produce.	.....do.....	5,000	Cooperage.
Newell's Run, Ohio.	158.0	Cooper stuff, produce, &c.	.....do.....	5,000	
Landing, Ohio.....	159.5	Petrol m oil, transfer.	.....do.....	10,000	Oil-wells.
Cow Creek, Va.....	160.7	Country produce..	Dry goods and groceries.	5,000	
Barker's Landing, Ohio.	161.2	.....do.....	.....do.....	2,000	
Calf Creek, Va.....	161.8	.....do.....	.....do.....	2,000	
Sheet's Land'g, Ohio	161.8	.....do.....	.....do.....	5,000	
Bull Creek, Va.....	164.0	Crude oil, lumber, and cooper stuff.	.....do.....	15,000	
Little Muskingum, Va.	167.0	Lumber, &c.....	.....do.....	5,000	
Marietta, Ohio.....	171.0	Furniture, buckets, and iron.	Dry goods, coal, and groceries, &c.	2,500,000	Mouth Muskingum River.
Harmar, Ohio.....	171.5	Flour, tobacco, and grain.	.....do.....	150,000	
Williamstown, Va..	171.0	Machinery, cast'gs, and produce.	.....do.....	5,000	Iron-works.
Finch's Land'g, Ohio	172.5	Grindstones.....	.....do.....	5,000	Grindstone mill.
Cole's Landing, Va.	176.4	Produce, stone, &c.	.....do.....	5,000	
Cutler's Landing,	178.0	Grindstones and produce.	.....do.....	5,000	
Landing, Ohio.....	179.5	Building stone...	.....do.....	5,000	
Spencer's Landing, Va.	179.7	Country produce..	.....do.....	5,000	
Parkersburgh, Va..	183.5	Machinery, oil, castings, and lumber.	Dry goods, &c.....	2,000,000	Oil-refineries.
Belpre, Ohio.....	183.5	Mills, flour, and produce.	.....do.....	50,000	Mills and Little Kanawha River.
Hill's Land'g, Ohio.	189.8	Lumber, country produce, and stone.	Dry goods, &c.....	3,000	
Walker's Landing, Va.	192.8	Country produce..	.....do.....	2,000	
Dake's Land'g, Ohio	193.0	.....do.....	.....do.....	2,000	
Curtis's Landing, Ohio.	193.5	.....do.....	.....do.....	2,000	

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Kennedy's Land'g, Ohio.	195.8	Cooper stuff and produce.	Dry goods, &c.	\$2,000	Cooperage.
Hosking City, Ohio.	197.4	.....do.....	.....do.....	50,000	
Harris's Landing, Va.	197.4	.....do.....	.....do.....	500	
Belleville, Va.	199.5	.....do.....	.....do.....	20,000	Cooperage.
Reed's Land'g, Ohio	199.5	.....do.....	.....do.....	5,000	
Fond Creek, Va.	203.6	.....do.....	.....do.....	5,000	Cooperage.
Jackson's Landing, Va.	205.5	.....do.....	.....do.....	5,000	
Robison Tid Land-ing, Ohio.	207.7	Flour, prod'ce, and cooperage.	.....do.....	5,000	Mills, &c.
Murraysville, Va.	207.7	Steam'b't hulls and produce.	.....do.....	20,000	Ship-yard.
Shade River, Ohio.	208.8	Yellow pine, &c.	Dry goods and groceries.	5,000	
De Witt's Run, Ohio	210.0	.....do.....	.....do.....	5,000	
Smith's Land'g, Va.	211.7	Grain and produce.	.....do.....	4,000	
Portland, Ohio.	214.0	Fruit and produce.	.....do.....	20,000	
Ravenswood, Va.	218.6	.....do.....	Gen'l merchandise.	20,000	
Hall's Land'g, Ohio.	221.5	Wood, bark, and produce.	.....do.....	5,000	
Hughes's Eddy, Va.	221.5	.....do.....	.....do.....	5,000	
Parr's Land'g, Ohio	223.5	Grain and produce.	.....do.....	5,000	
Ripley's Landing, Va.	228.5	Bark and produce.	.....do.....	25,000	
Landing, Va.	230.5	.....do.....	.....do.....	5,000	
O K Landing, Ohio.	230.5	Country produce.	.....do.....	5,000	
Letartsville, Ohio.	233.5	Grain and produce.	.....do.....	5,000	
Landing, Va.	233.5	Yellow pine lum-ber-mills.	.....do.....	4,000	Saw-mills.
Antiquity Rock, Ohio.	237.6	Coal, lumber, hulls, and produce.	.....do.....	50,000	Ship-y'ds and saw-mills.
Racine, Ohio.	239.3	Hulls, produce, bark, and lumbr.	General merchan-dise and logs.	25,000	Flour and saw-mills, &c.
Graham's Station, Va.	239.3	Grain and produce.	Dry goods, &c.	5,000	
Syracuse, Ohio.	243.4	Coal and salt.	.....do.....	100,000	Salt-wells and mines.
Sliding Hill, Va.	243.7	Salt.	.....do.....	50,000	Do.
Hartford City, Va.	244.6	Coal, salt, &c.	Gen'l merchandise.	100,000	Mines, salt-wells, dry dock, coop'ge.
Landing, Va.	245.8	Salt.	.....do.....	10,000	Salt-wells.
Minersville, Ohio.	245.8	Coal.	.....do.....	5,000	Coal-mines.
Pomeroy, Ohio.	246.5	Salt, coal, iron, &c.	Dry lumber, &c.	8,000,000	Ship-yards, mines, iron-works, dry docks, &c.
Mason City, Va.	248.5	Salt, coal, and pro-duce.	Gen'l merchandise.	50,000	Saw-mills, mining, &c.
Landing, Va.	250.0	Bar-iron, salt, and coal.	.....do.....	50,000	Iron works, wells, and mines.
West Columbia, Va.	251.5	Salt and coal.	.....do.....	50,000	Saw-mills, wells, and mines.
Silver Run, Ohio.	253.4	.....do.....	.....do.....	25,000	Wells, mines, &c.
Cheshire, Ohio.	255.4	Flour, hay, and produce.	.....do.....	25,000	Flour-mills, &c.
Mackerel's Land'g, Va.	258.0	Country produce.	.....do.....	12,000	
Addison, Ohio.	260.2	Hay and produce.	.....do.....	8,000	
Point Pleasant, Va.	263.4	Coal, salt, lumber, flour, produce, &c.	Manufactures and merchandise.	4,500,000	Trade of Big Kanawha River, (Appendix C.)
Gallipolis, Ohio.	267.0	Merchandise and general manu-factures.	.....do.....		
Clipper Mills, Ohio.	271.0	Country produce.	.....do.....	4,000	
Raccoon Creek, Ohio	274.1	Pig-metal, staves, &c.	.....do.....	60,000	Furnaces in inter-rior.
Chambersb'gh, Ohio	277.5	Produce, mills, &c.	Logs and merch'se.	8,000	Saw-mills, &c.
Managerie's Land-ing, Va.	278.3	Country produce, &c.	Gen'l merchandise.	10,000	
Bladensburg, Ohio.	279.0	Cooper stuff and tan bark.	.....do.....	5,000	
Hawley's, Va.	279.0	Country produce.	.....do.....	12,000	
Sample's, Ohio.	279.6	Coal.	.....do.....	20,000	Coal-mines.
Bushes' Mill, Ohio.	281.2	Flour and grain.	.....do.....	5,000	Flour-mill.
Glenwood Landing, Va.	283.7	Tan bark and coop-erage.	.....do.....	5,000	

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Guthrie's Landing, Ohio.	284.4	Grain and produce.	Gen'l merchandise.	\$7,000	
Jenkins's Landing, Va.	286.7	Grain, hay, and produce.	do	14,000	
Rankin's Landing, Ohio.	289.0	Tan bark, cooper stuff, &c.	do	12,000	
Millersport, Ohio..	293.0	do	do	20,000	
Haskellville, Ohio..	295.0	do	do	15,000	
Nine-mile Run, Va.	297.0	Grain and produce.	do	5,000	
Gardner's Landing, Ohio.	298.7	Barrels and produce.	do	20,000	
Guyandotte, Va....	302.7	Grain, flour, lumber, coal, &c.	do	100,000	Guyandotte River trade.
Indian Guyandotte Landing, Ohio.	304.0	Produce and grain.	do	20,000	
Maple Grove, Va...	306.3	Hay, produce, and grain.	do	10,000	
Symm's Creek, Ohio	306.3	Lumber and produce.	do	12,000	Saw-mills.
Burlington, Ohio..	311.0	Grain, produce, and pottery.	do	25,000	Pottery, &c.
Ceredo, Va.....	312.2	Produce and lumber.	do	10,000	Saw-mill & match-factory.
Catlettsburg, Ky..	314.5	Lumber, coal, &c.	do	500,000	Big Sandy River trade.
South Point, Ohio..	314.5	Grain and produce.	do	25,000	
Sheridan Coal W'ks, Ohio.	318.0	Coal	do	25,000	Mines.
Ashland, Ky.....	320.0	Coal and produce	do	500,000	Lexington Railway.
Coal Grove, Ohio...	320.0	Fire-brick	do	25,000	Fire-brick works.
Bellefonte Landing, Ky.	321.5	Pig-metal and fire-brick.	do	250,000	Furnace in interior.
Amanda Furnace, Ky.	323.5	Pig-metal.	do	100,000	Furnace.
Iron-ton, Ohio.....	325.0	Iron, nails, flour, &c.	General trade	5,000,000	Several iron-w'rks.
Hanging Rock, Ohio	327.5	Iron, coal, and produce.	Gen'l merchandise.	1,000,000	Furnace, &c.
Union Furnace Landing, Ohio.	329.5	Pig-metal and produce.	do	1,000,000	Do.
Oil-Works, Ky.....	330.3	Pig-metal and refined oil.	do	150,000	Furnace and refinery.
Greensburg, Ky	333.7	Pig-metal, coal, and produce.	do	1,500,000	
Haverhill, Ohio....	334.0	Grain, flour, and produce.	do	20,000	
Smith's Run, Ky..	336.0	Cooper stuff, &c.	do	5,000	
Junior Landing, Ohio.	337.0	Pig-metal and produce.	do	200,000	Furnace.
Reid's Landing, Ky.	338.0	Leather and produce.	Hides and general merchandise.	50,000	Tannery.
Franklin Furnace, Ky.	338.0	Pig-metal and produce.	do	200,000	Furnace.
Excelsior Lime-Works, Ky.	342.5	Lime and produce.	do	100,000	Lime-kilns.
Pine Run Landing, Ohio.	344.2	Pig-metal and produce.	do	150,000	Furnace.
Scioto Village, Ohio.	346.5	Fire-brick, lumber, metal, &c.	do	1,000,000	Brick-works, &c.
Springville, Ky....	353.0	Whisky, leather, &c.	do	200,000	Tannery and distillery.
Portsmouth, Ohio..	353.0	Iron, machinery, flour, &c.	General trade	12,000,000	Iron-works, &c.
Landing, Ohio.....	360.0	Tan-bark and produce.	Gen'l merchandise.	5,000	
Adams's Landing, Ohio.	362.0	Queensware, produce, &c.	do	10,000	Queensware manufactory.
Quincy Landing, Ky.	364.0	Pig-metal, bark, &c.	do	100,000	Furnace.
Boone Furnace Landing, Ohio.....	365.5	do	do	100,000	Do.
Landing, Ohio.....	369.0	Lumber and produce.	do	5,000	Saw-mill.
Buena Vista, Ohio..	371.0	Fruit, grain, and cut build'g stone.	do	100,000	Stone-mill.
Rocksville, Ohio..	372.0	Fruit, grain, and shale oil.	do	100,000	Oil-w'rks and stone saw-mill.

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Fairview Landing, Ky.	373.5	Stone and bark...	Gen'l merchandise.	\$50,000	
Vanceburg, Ky....	375.0	Flour, leather, bark, &c.	.....do.....	200,000	
Rome, Ohio.....	381.0	Grain, fruit, bark, &c.	.....do.....	50,000	
Stout's Landing, Ky	383.0	Grain, fruit, hay, &c.	.....do.....	10,000	
Concord, Ky.....	387.0	Flour, leather, and lumber.	.....do.....	75,000	Saw-mill and flour-mill.
Wrightsville, Ohio.	388.8	Grain, produce, &c.	.....do.....	15,000	
Manchester, Ohio..	394.0	Flour, grain, lumber, &c.	General trade.....	230,000	Saw-mill and flour-mill.
Springdale, Ky....	400.0	Grain, produce, &c.	Gen'l merchandise.	10,000	
Maysville, Ky....	405.5	Pork, tobacco, oil, &c.	General trade.....	8,000,000	Shale oil-works, &c.
Aberdeen, Ohio....	405.5	Pork, tobacco, and produce.	Gen'l merchandise.	50,000	
Charlestown Land- ing, Ky.	410.5	.....do.....	.....do.....	20,000	
Logan's Cap, Ohio..	410.5	Wine, tobacco, and produce.	.....do.....	8,000	Vineyards, &c.
Ripley Cap, Ohio...	414.0	Grain, hay, tobacco, whisky, lard, pork, &c.	.....do.....	5,000,000	Distillery, &c.
Dover, Ky.....	416.5	Pork, lard, and tobacco.	.....do.....	125,000	
Levanna, Ohio.....	416.5	Pork, lard, tobacco, and wine.	.....do.....	60,000	
Bushmeyer Landing, Ohio.	418.0	Wine.....	.....do.....	10,000	Vineyards.
Higginport, Ohio...	421.3	Pork, grain, tobacco, whisky, and wine.	.....do.....	2,000,000	Distillery, &c.
Augusta, Ky.....	424.0	Grain and tobacco.	.....do.....	85,000	
Utopia, Ohio.....	426.5	Wine and fruit.....	.....do.....	10,000	
Rural Village, Ohio.	428.0	Tobacco, grain, wine, and fruit.	.....do.....	15,000	
Rock Spring Land- ing, Ky.	428.0	Whisky and tobacco.	.....do.....	20,000	
Chilo, Ohio.....	431.0	Grain, wine, fruit, &c.	.....do.....	20,000	
Metcalf's Landing, Ky.	431.0	Tobacco.....	.....do.....	12,000	
Melville, Ohio.....	435.0	Whisky, flour, grain, &c.	.....do.....	250,000	Flour-mills.
Fosterville, Ky....	435.0	Tobacco and produce.	.....do.....	100,000	
Stepstone, Ky.....	437.5	Tobacco and cooper-stuff.	.....do.....	15,000	
Moscow, Ohio.....	439.0	Flour, whisky, grain, and fruit.	.....do.....	10,000	Distillery.
Landing, Ky.....	439.0	Bark, wood, and cooper stuff.	.....do.....	4,000	
Point Pleasant, Ohio	441.5	Country produce...	.....do.....	2,000	
California, Ky.....	444.0	Wood and produce.	.....do.....	10,000	
New Richmond, Ohio.	444.0	Whisky, grain, fruit, &c.	.....do.....	200,000	
Palestine, Ohio....	450.3	Brick, wood, flour, and fruit.	Gen'l merchandise.	\$25,000	Brick-works.
Buzzard's Roost, Ohio.....	454.0	Wine, fruit, &c....	.....do.....	2,000	Vineyard.
California, Ohio....	459.0	Castings.....	.....do.....	5,000	Foundry.
Cincinnati, Ohio...	466.5	Pork, gen'l manufactures, &c.	General trade.....	148,500,000	See Appendix D.
Refuse Works, Ohio	474.5	Hair, soap, candles, &c.	Dead animals' refuse, &c.	50,000	
Taylor'sport, Ky...	478.0	Grain and produce.	Gen'l merchandise.	10,000	
Lawrenceburgh, Ind.	489.0	Flour, pork, grain, &c.	.....do.....	700,000	Pork-packing, mills, &c.
Petersburgh, Ky...	491.0	Whisky, pork, &c.	Grain, &c.....	100,000	Pork-packing, distillery.
Aurora, Ind.....	493.0	Tobacco, grain, flour, whisky, and pork.	Gen'l merchandise.	500,000	Do.
Bellview, Ky.....	499.0	Grain and produce.	.....do.....	2,000	

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Rising Sun, Ind....	502.0	Pork, produce, live hogs, and whiskeys.	Gen'l merchandise.	\$500,000	Pork-packing, distillery.
North's Landing, Ind.	505.5	Grain and hay....	do.....	5,000	
Hamilton's Landing, Ky.	510.5	Hay, &c.....	do.....	5,000	
Patriot, Ind.....	514.5	Whisky, pork, flour, &c.....	do.....	125,000	Distilleries, &c.
Sagar Creek, Ky...	518.3	Hay and produce..	do.....	10,000	
Warsaw, Ky.....	523.5	Tobacco, flour, and live stock.	do.....	80,000	Flour-mills.
Florence, Ind.....	524.5	Hogs, hay, and produce.	do.....	50,000	Saw-mills, &c.
Log Lick Landing, Ind.	528.5	do.....	do.....	10,000	Distilleries, mills, &c.
Vevay, Ind.....	533.0	Hay, hogs, and whisky.	do.....	300,000	
Ghent, Ky.....	533.0	Tobacco and flour.	do.....	50,000	
Craig's Bar, Ind....	537.2	Hay and grain....	do.....	6,000	
Scott's Landing, Ky	538.0	do.....	do.....	2,000	
Carrolton, Ky.....	541.0	Tobacco, grain, flour, pork, &c.	do.....	2,500,000	Kentucky River trade.
Brooksbyury, Ind...	545.0	Grain, produce, &c	do.....	4,000	Saw and flour mills.
Madison, Ind.....	553.5	Starch, whisky, pork, flour, &c.	Lumber, coal, &c..	12,000,000	Ship-yards, mills, &c.
Hanover Landing, Ind.	557.3	Grain and produce.	Gen'l merchandise.	2,000	
Reed's Landing, Ind	561.2	Lumber and produce.	do.....	10,000	Saw-mills, &c.
Marble Hill, Ind...	566.3	Marble and stone.	do.....	10,000	Marble-quarries.
Garrett's Landing, Ky.	570.3	Tobacco and grain.	do.....	10,000	
Bethlehem, Ind....	570.0	Grain and hay....	do.....	2,000	
Oldem's Landing, Ky.	571.6	Tobacco and hay..	do.....	10,000	
Westport, Ky.....	575.5	Tobacco, flour, whisky, &c.....	do.....	25,000	Distilleries, &c.
Herculaneum, Ind..	580.5	Flour, hay, and produce.	do.....	10,000	Mills.
Charleston Landing, Ind.	586.5	Lime, grain, &c...	do.....	10,000	Lime-kilns.
Utica, Ind.....	591.4	Lime.....	do.....	100,000	Do.
Jeffersonville, Ind..	597.0	Pork, whisky, &c.	Coal, lumber, and general trade.	5,000,000	See Appendix E.
Louisville, Ky.....	598.0	General trade.....	do.....	15,000,000	Do.
Shippingport, Ky...	600.5	Cement.....	Stone.....	500,000	
Clarksville, Ind....	600.5	do.....	do.....	100,000	
Portland, Ky.....	602.0	General trade.....	General trade.....	4,000,000	Gen'l river transport.
New Albany, Ind..	602.0	do.....	Coal, lumber, ore, &c.	15,000,000	Ship-building, &c.
Knob Creek, Ind...	612.0	Building-stone....	Gen'l merchandise.	2,000	Quarries.
Blunk's Landing, Ind.	615.0	Sand and building material.	do.....	5,000	Sand-pits.
Stewart's Landing, Ind.	616.3	Hay, grain, and produce.	do.....	5,000	
Strong's Landing, Ind.	621.0	Tobacco, grain, hay, &c.	Gen'l merchandise.	\$5,000	
Applegate's Landing, Ind.	622.3	do.....	do.....	100,000	
West Point, Ky....	624.3	do.....	do.....	50,000	
Evans's Landing, Ind.	626.3	Hay and general produce.	do.....	5,000	
New Boston, Ind...	628.0	Hay, grain, and produce.	do.....	5,000	
Otter Creek, Ky...	631.0	Grain and produce.	do.....	5,000	
Rock Haven, Ky...	632.0	Tobacco, pork, flour, cotton, &c	do.....	50,000	Cotton-mills.
Tobacco Landing, Ind.	635.5	Tobacco, grain, hay, &c.....	do.....	5,000	
Brandenburgh, Ky.	640.0	Tobacco, grain, and produce.	do.....	50,000	Flour-mills and pork-packing.
Mauckport, Ind....	642.4	Hay, grain, and produce.	do.....	10,000	
Lopp's Landing, Ind.	646.0	Cooper stuff and produce.	do.....	3,000	Cooperage.

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Granny's Gut Run, Ky.	648.5	Lime, grain, and produce.	Gen'l merchandise.	\$10,000	Lime-kilns.
New Amsterdam, Ind.	650.0	Grain and produce.	.....do.....	5,000	
Leavenworth, Ind.	658.0	Tobacco, grain, lumber, barrels.	.....do.....	50,000	Saw-mills, cooper- age, &c.
Fredonia, Ind.	661.0	Grain and produce.	.....do.....	4,000	
Amos Landing, Ind.	665.3	.....do.....	.....do.....	2,000	
Cedar Branch, Ky.	666.1	Lime and country produce.	.....do.....	3,000	
Hawkins's Land- ing, Ind.	668.0	Grain, lumber, and produce.	.....do.....	3,000	
Wolf's Creek, Ky.	671.0	.....do.....	.....do.....	10,000	Saw-mills.
Alton, Ind.	673.0	.....do.....	.....do.....	20,000	Do.
Galcy's Landing, Ind.	675.5	Cooper stuff and produce.	.....do.....	10,000	Cooperage.
Reno, Ind.	677.0	.....do.....	.....do.....	10,000	
Hatfield Landing, Ind.	679.0	Grain and produce.	.....do.....	10,000	
Concordia, Ky.	680.7	Cooper stuff, bark, and produce.	Coal and general merchandise.	10,000	Cooperage.
Derby, Ind.	686.5	Grain, produce, and bark.	Gen'l merchandise.	10,000	
Cedar Grove Land- ing, Ky.	687.5	Hay, grain, and produce.	.....do.....	3,000	
Cummings's Land- ing, Ind.	687.5	.....do.....	.....do.....	3,000	
Rome, Ind.	695.0	Flour, grain, hay, and produce.	.....do.....	10,000	Flour-mills, &c.
Stevensport, Ky.	695.0	Tobacco, flour, grain, hay, and produce.	.....do.....	90,000	Do.
Holt's Landing, Ky.	697.0	Fruit, hay, and produce.	.....do.....	10,000	
Cloverport, Ky.	705.0	Tobacco, coal, hay, flour, &c.	.....do.....	150,000	Coal-mines and mills.
Tobinsport, Ind.	705.0	Hay, grain, &c.	.....do.....	5,000	
Hog's Point, Ind.	708.5	.....do.....	.....do.....	10,000	
Deer Creek, Ind.	712.4	Grain and produce.	.....do.....	10,000	
Rock Island, Ind.	713.0	Coal and stone.	.....do.....	1,000,000	
Hawesville, Ky.	717.0	Coal, tobacco, and general produce.	.....do.....	100,000	Coal-mines.
Cannelton, Ind.	717.0	Coal, cotton man- ufactures, and produce.	.....do.....	500,000	Cotton-mills and coal-mining.
Tell City, Ind.	720.0	Flour and general produce.	.....do.....	150,000	Flour-mills, &c.
Troy, Ind.	724.0	Flour, produce, and crockery.	.....do.....	150,000	
Emrick's Landing, Ky.	727.0	Grain and produce.	.....do.....	10,000	
Woodland, Ind.	729.2	Coal.	.....do.....	10,000	Coal-mines.
Lewisport, Ky.	731.0	Tobacco, grain, and produce.	.....do.....	25,000	
Grandview, Ind.	735.5	Tobacco, hay, grain, &c.	.....do.....	100,000	
Honey Creek, Ind.	738.3	Coal and hay.	.....do.....	\$30,000	Coal-mines.
Rockport, Ind.	740.5	Flour, tobacco, grain, and produce.	.....do.....	150,000	Flour and saw mills.
Landing, Ky.	742.0	Grain, hay, and produce.	.....do.....	15,000	
Snider's Landing, Ind.	744.5	Grain and produce.	.....do.....	5,000	
Owenborough, Ky.	749.0	Tobacco, pork, grain, and produce.	.....do.....	1,000,000	Pork packing, mills, &c.
Bon Harbor, Ky.	752.0	Coal, tobacco, and grain.	.....do.....	10,000	
Enterprise Village, Ky.	755.5	Grain and produce.	.....do.....	10,000	
Point Isabel, Ind.	758.0	Hulls, grain, and produce.	.....do.....	10,000	
Grissen's Landing, Ky.	758.0	Whisky, grain, &c.	.....do.....	10,000	Distillery.
Tobacco Ware- house, Ky.	767.5	Tobacco and grain.	.....do.....	30,000	

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburg.	Exports.	Imports.	Estimated value.	Remarks.
Newburgh, Ind	769.8	Coal and general produce.	General trade	\$200,000	Saw and flour mills, &c.
Evansville, Ind ...	783.0	Grain, pork, to- bacco, and whis- ky.	.....do	12,500,000	See Appendix F.
Tobacco Bend, Ky..	785.5	Tobacco, grain, &c.	General merchan- dise.	50,000	
Dutch Bend, Ind...	788.0	Grain and produce.	.....do	50,000	
Henderson, Ky.....	794.5	Tobacco and pro- duce.	.....do	3,000,000	Saw, flour mills, &c.
Maxwell's Land- ing, Ind.	796.0	Grain and produce.	.....do	20,000	
Landing, Ind.....	805.0	.....do .....	.....do	10,000	
West Franklin, Ind.	807.5	Grain, cooper stuff, &c.	.....do	20,000	
Walnut Bend Land- ing, Ky.	814.0	Grain, tobacco and produce.	.....do	50,000	
New York Land- ing, Ky.	815.7	.....do .....	.....do	50,000	
Mt. Vernon, Ind ...	818.5	Pork, tobacco, grain, flour, &c.	General trade	500,000	Saw, flour mills, &c.
Floyd's Landing, Ind.	823.5	Grain and produce.	General merchan- dise.	10,000	
Uniontown, Ky	832.5	Tobacco, coal, grain, flour, and whisky.	General trade	350,000	Coal-mines, distil- leries, mills, &c.
Wabash River.....	838.2	Grain, flour, and produce.	.....do	15,000,000	Included in Evans- ville, Shawnee- town, Union- town, &c. (See Appendix G.)
Raleigh, Ky.....	843.3	Tobacco, grain, &c.	General merchan- dise.	20,000	
Shawneetown, Ill ..	848.0	Flour, tobacco, grain, whisky, &c.	.....do	500,000	Saw and flour mill, &c.
Coal Works, Ill	850.0	Coal .....	.....do	50,000	Coal railroad three miles to mine.
Curlew Coal Works, Ky.	857.5	.....do .....	.....do	5,000	Coal-mines.
Sellers & Co.'s Works, Ky.	857.5	Coal and paper....	Cane, poles, and general merchan- dise.	5,000	Coal-mines, paper- factory.
Shotwell's Works, Ky.	859.3	Coal	General merchan- dise.	200,000	Coal railroad.
Caseyville, Ky	860.5	Coal, tobacco, grain, hemp, &c.	.....do	150,000	Flouring-mills.
Battery Rock, Ill...	860.5	Coal .....	.....do	50,000	
Weston, Ky.....	864.2	Grain and produce.	.....do	20,000	
Ford's Perry, Ky...	866.0	Tobacco, grain, hemp, &c.	.....do	75,000	
Cave-In-Rock, Ill ..	869.0	Tobacco and coun- try produce.	.....do	10,000	
Big Hurricane C'k, Ky.	873.7	Tobacco, hemp, grain, &c.	.....do	15,000	
Elizabethtown, Ill..	877.0	Grain, tobacco, pig- metal, and lead.	General merchan- dise.	\$250,000	Furnace, lead- mines, &c.
Rose Clair, Ill.....	879.5	Lead, grain, &c ...	.....do	50,000	Lead-mines.
Carrsville, Ky	881.5	Tobacco, hemp, and grain.	.....do	20,000	
Trake's Coal Mines, Ky.	882.3	Coal .....	.....do	50,000	Coal-mines.
Parkson's Landing, Ill.	884.2	Grain, tobacco, and produce.	.....do	10,000	
Buena Vista, Ill....	886.6	.....do .....	.....do	5,000	
Golconda, Ill.....	890.3	Tobacco, hemp, produce, and shingles.	General trade	100,000	Shingle factory, &c.
Bay City, Ill	899.0	Grain, produce, lumber, &c.	General merchan- dise.	10,000	Saw-mills, &c.
Mill Bayou, Ky....	900.0	Lumber, grain, &c.	.....do	10,000	Do.
Birdsville, Ky.....	902.5	Tobacco, grain, hemp, &c.	.....do	10,000	
Smithland, Ky	907.5	Produce, tobacco, hemp, and lum- ber.	General trade	30,000,000	Saw-mills and lum- ber-trade. (See Appendix H.)

General character and estimated value of the river-trade, &c.—Continued.

Place.	Miles from Pittsburgh.	Exports.	Imports.	Estimated value.	Remarks.
Pull Tight, Ill.	909.5	Produce, shingles, and cooper stuff.	General merchandise.	\$30,000	Saw-mills, lumber-trade, cooperage, &c.
Paducah, Ky.	919.5	Hemp, pork, produce, and grain.	General trade.	40,000,000	Tennessee River trade, ship-yards, &c.
Brooklyn, Ill.	923.0	Grain, shingles, &c.	General merchandise.	50,000	Shingle-factory.
Metropolis, Ill.	929.2	Hulls, produce, tobacco, hemp, &c.	General trade.	200,000	Ship-yard, &c.
Fletcher's Landing, Ill.	937.0	Grain and produce.	General merchandise.	10,000	
Hilderman's Landing, Ill.	939.0	.....do .....	.....do	10,000	
Wilkinson's Landing, Ill.	942.5	.....do .....	.....do	5,000	
Eckle's Landing, Ill.	948.7	.....do .....	.....do	5,000	
Caledonia Landing, Ill.	951.0	Lumber, grain, hemp, tobacco.	.....do	10,000	Saw-mills, &c.
Lauding, Ky.	955.0	Tobacco, hemp, &c.	.....do	10,000	
Kelsey's Landing, Ill.	956.0	Grain and produce.	.....do	10,000	
Mound City, Ill.	959.0	Hulls, &c.	General merchandise, lumber.	150,000	Naval station.
Cairo, Ill.	967.0	Cotton, hemp, coal, salt, lumber, iron, grain, &c.	General trade.	20,000,000	

Total annual value, Ohio River trade, \$694,007,000.
Respectfully submitted.

W. MILNOR ROBERTS,
U. S. Civil Engineer, in charge Ohio River Improvement.

THOMAS P. ROBERTS,
Assistant United States Civil Engineer.

I will state that Mr. Sherlock, a large steamboat-owner, is present, and he can give you a good idea of this local trade along the river.

As an illustration of it, I went down the river last spring on a Memphis boat, and she stopped at every landing to take in freight. The quantity of freight she did take in was astonishing, and to show you how often she stopped, when we passed through the Louisville Canal, we passed one of those six-acre coal-tows going down the river, and that tow passed us before we got to Cairo five or six times, and actually got to the place I was going to ahead of us. The cause of that was that this boat stopped at all the little landings to take in freight from the country bordering on the river, hay, grain, tobacco, and almost everything that you could think of.

By the CHAIRMAN:

Q. Your committee recommend one central water-line. What, in your judgment, is the proper one?

A. I suppose they refer to this James River Canal. It is the one which connects with the Ohio River through the Kanawha.

By Mr. DAVIS:

Q. What effect would it have upon the trade of Cincinnati and its vicinity if the northern water-line was open and the mouth of the Mississippi improved, and additional water-facilities given to Cincinnati; would it have any effect?

Mr. CONKLING, (to Mr. Davis.) What do you mean by the northern water-line?

Mr. DAVIS. The lakes, the Erie Canal enlarged, the Fox River, and Wisconsin improvement.

Mr. SMITH. Mr. Sherlock could answer that question as to the effect of the improvement of the mouth of the Mississippi, and as to what effect it would have upon the commerce of the river better than I can. As to the opening of these northern lines, I do not think they would affect our trade at all. It is too far north of here in latitude.

By Mr. NORWOOD:

Q. Do you mean they would not diminish or improve your trade?

A. I do not think they would diminish it at all, or increase it. They would affect the trade of Chicago a great deal more than they would us, because we do not get much grain from that country; not enough, at least, except to supply our own deficiencies here. Grain does not come from that country; it does not seek the sea-board through Cincinnati.

By Mr. DAVIS:

Q. Is that accounted for, or not, because you have no water communication here with the East?

A. I suppose it is, sir. But I would state now that one of the important points with reference to this cheap transportation is this: You are doubtless aware that a large percentage of the cost of transporting grain from the producer to the consumer is taken up by what is called "middle-men;" that is, it passes through Chicago, for instance, and is then taken to New York, and passed through New York from the railroad to the steamship. You will find, if you obtain the figures, that a large percentage of the cost of transportation from the producer to the consumer, or to the port of shipment for Europe, is the cost of transporting it through the cities, and handling it. The Baltimore and Ohio railroad is now building a road to Chicago, or out in that direction, and you can put grain, or any article of produce that is intended for shipment to Europe, upon a train; it is taken to Baltimore to the pier, and loaded into a vessel without any expense to the shipper. The difference between the Baltimore route and the New York route to Europe is, therefore, getting to be very marked; but the Baltimore road not having facilities for reaching out into the West, passing over rival roads, the business has not yet grown to a very great magnitude, although it is growing every year, and they are adding to these lines of steamships. The natural trade between Europe and the United States is not with Baltimore, and they have been building their steamships and keeping up that trade, and it is increasing. Philadelphia has now gone into the same thing. The Pennsylvania Central Road is doing the same. Our merchants now under this new law are going to import a great many articles. The drawback is that the tonnage of Baltimore is limited. The foreign commerce does not naturally flow into it; it goes to New York. This line of steamers which I speak of is owned at Baltimore, or the Baltimore and Ohio Railroad are responsible for them.

I understand that the Philadelphia and Pennsylvania Road, in order to compete with the Baltimore and Ohio Railroad, is going into the same business, and when they secure adequate facilities at these places for removing the surplus produce of this country which goes to Europe, they will either compel New York to do the same thing, or she will lose her trade. The difference in the cost of shipping by way of Baltimore now is a profit to the owner of the property.

Q. Does any of your produce or manufactures which go east go by water, or is it all sent by rail?

A. Mr. Eggleston could answer that question better than I, as he is a merchant here.

MR. EGGLESTON. I will say that there is nothing which goes by canal East now at all from these cities. That has been almost abandoned, so far as the through business is concerned. Some property goes east from here by river to Pittsburgh, and other points; some to Bellaire, but not much.

By Mr. CONKLING:

Q. When you speak of canals, you speak of the Ohio canals?

A. From here to Toledo. That is the only canal which comes here now. There is no through business on that canal here at all.

By Mr. DAVIS:

Q. Can you or any other gentleman give us the rate prevailing now between here and the East?

A. Do you mean the railroad rate?

Q. Rail and water.

A. We have given that for the last year. The railroad charges and the water charges at the present time we could not give. They would not be any indication, for the reason that we have had no water until this rise. The railroad changed their rates every once in a while, and when the river is up they put their rates down. We will give that in a tabulated form. I will say that at the close of water navigation, that is, when the lakes and canals close, the railroads always put up their rates. They have winter and summer rates. With reference to moving by water, all the freight that goes over the Chesapeake and Ohio Railroad goes by water from here to Huntington. That is their connection. A great deal of pork packed for eastern markets used to go by way of New Orleans by water and thence by vessels; but that was when prices were low and the eastern merchants would come out here and pack their pork in the winter and ship it before it was cured, and it would cure on ship-board. Time was no object to them. The pork was packed in the winter for their summer trade, and they would take it around by New Orleans, and by sea to Boston, New York, and Baltimore.

By Mr. NORWOOD:

Q. Do you know why the railroads put their rates up in winter?

A. One reason they give for it is that it costs more to move freight in winter by rail than it does in summer; but the principal reason is that there is no water competition, no lake, no canal to interfere with them, and of course there is more business for the road. It is one of those things which is peculiar to human nature to get all you can.

Q. We have had various reasons given us, but I wish to know whether you had an opinion that was different.

A. I think the principal reason is that they want to get all they can, all that competition will allow them to get. They sometimes combine here. Four or five trunk-lines enter here and combine and put rates up arbitrarily, without any other reason than that they want to put them up. Then they work together for a little while and begin to cheat each other, and then they break the rates and do what they call cutting. Then they get them down. They have carried freight from here to New York for 20 and 25 cents a hundred pounds when they would have sharp competition in cutting and fighting each other. Then, when they got tired of that, they would get together and put freights up.

There are some very peculiar features in this railroad business which I presume you have learned. For instance, I do not think there is any very good reason really to complain of through-rates of railroads; that is, rates between what is called competing points where there is competition. They are generally low enough. It is at the intermediate stations that the complaints are made. For instance, a man is in New York who lives on the Wabash River, one hundred and fifty or two hundred miles west of here. He can ship freight almost as cheap from New York to the Wabash River as he can to Cincinnati; and he can get freight from New York to the Wabash River very often cheaper than he can get it from Cincinnati to the Wabash River, provided he happens to live at a point on the river where there is no competition from here, where but one road has a monopoly of business. They will charge as much for carrying freight from here two hundred miles as they charge him for carrying it all the way from New York there. The consequence is that the geographical positions amount to very little. It operates against the large cities, and tends to concentrate the business in New York. I was up on the Marietta Road not many months ago, and I found they were paying as much for getting freight from Cincinnati, forty miles from here, as they were paying for carrying it to Baltimore from Cincinnati. But when you start from here, there is competition. When you get up there, there is no competition. You have to ship it by that railroad, or not ship it at all.

I will mention one instance of a pork-packer at Brookville, Ind., living on the Bellefontaine Road, as they call it. He wanted to ship pork to New York by car-loads—having several car-loads—and found it paid him to ship pork by that road down to Indianapolis, pay the local freight on it, and then ship it back over the same road to New York; and I think he told me he saved \$40 a car by that operation. He was at Brookville, and he wanted to get to New York, and there was only one road to go there. When he took it down to Indianapolis he had three or four roads, and went out and got through-rate, and this same road took the freight back.

JOHN COCHNOWER examined.

By the CHAIRMAN:

Question. What is your business?

Answer. The coal business.

Q. Please state the mode of transporting coal along the Ohio River.

A. It is run principally in barges now, towed by steamboats.

Q. Will you give us, if you please, some of the particulars about the barges; what they will carry; how they are built, and what they cost?

A. The average cost of a number one barge is \$1,450. They are in size 130 feet long, 24 feet wide, and 7½ feet deep.

Q. How much does each barge hold?

A. About 12,000 bushels; and there are some smaller ones, but that is the general size used. There are some a great deal larger.

Q. How many of these are formed into what you call a tow?

A. That depends upon the capacity of the boat; some taking ten, and some twenty, in a tow; and some larger ones have even taken thirty at a tow to New Orleans.

Q. Are they always tugged down, or do they float?

A. They are tugged. They do not float of late years. They used to do a great deal of floating, but there has been very little floated for ten years now.

Q. What is the effect of the obstruction at the Louisville Falls as to these floats or tows? Do you break them up?

A. Yes, sir; we have to break them up.

Q. Each boat goes through the lock separately?

A. They can take four of these ordinary sized barges at a time. They run a great many flat-boats, 28 feet in width, and 160 or 180 feet in length.

Q. But as to the barges?

A. They take four through the new locks.

Q. They never float over the falls?

A. When the river is at a high stage they go right on. There are stages of water when it is perfectly smooth, and they never break their tow. But at an ordinary stage of water they have to break their tows and take them through the canal.

Q. What is the charge for towage? Do you pay the whole charge for the use of the boat and towage in one charge?

A. The principal owners of these barges own their boats and do their own towing. It all runs in the same account. In going through the canal they lock through four. They used to lock two, but I believe they lock four now.

Q. State if you please the cost of towing per bushel from Pittsburgh to Louisville?

A. From 2 to 3 cents a bushel.

Q. That is the cost of towing alone?

A. Yes, sir.

Q. But where they supply the boats, what is the cost of the boat?

A. I cannot tell you. I have been in the running business for a good many years myself. We own our own barges and boats, and it all goes into the general account. We do not keep each separately. The cost of the coal is so much put in the barges, and then the aggregate amount and expenses are so much. I do not think we could say exactly what it would cost.

Q. Could you give us an idea of about the cost of a bushel of coal from Pittsburgh to Louisville?

A. I think you can take an average of $2\frac{1}{2}$ cents as the towing, but that does not take into account the wear and tear of the barges.

Q. I want to include everything.

A. They consider the trip about a cent a bushel, the way they count their barges if they hire them out. They think they are worth a cent a bushel a trip.

Q. That would be three and a half?

A. Yes, sir; I think three and a half would cover all the expense and keep the barges up.

Q. What is the distance from Pittsburgh to Louisville?

A. It is about six hundred and fifty miles.

Q. Does that include getting the barges back?

A. Sometimes it does and sometimes it does not. I suppose that will pay the whole for taking them back.

Q. Three and a half to four cents?

A. Yes, sir.

Q. How much less is it to Cincinnati?

A. There is very little difference.

Q. From Louisville to New Orleans, what is then the cost?

A. I do not know from there. I have sent our own boat through from Pittsburgh at 7 cents.

Q. From Pittsburgh through to New Orleans 7 cents?

A. Yes, sir; to bring the barges back.

Q. Now describe, if you please, the other boats which are not barges, and which you call flat-boats.

A. They are a more temporary thing with an inch and a half to two inch pine plank on the sides, and thin bottoms. They never pretend to bring them back, and yet they have of late, when boats have got so high, commenced to bring them back.

Q. What was their value?

A. One of them rigged up will cost about \$1,200. They carry from twenty-five to thirty thousand bushels.

Q. What becomes of them when they deliver their cargoes at New Orleans?

A. They wreck them and use the lumber.

Q. To what extent are flats used?

A. The southern market is principally supplied by these.

Q. All below Louisville?

A. Yes, sir. That is, below the mouth of the Mississippi—the mouth of the Ohio rather.

Q. What proportion of coal is carried in barges and what proportion in flats?

A. I should think two-thirds in barges. There is scarcely ever a boat unloaded here. This market and Louisville are principally supplied by the barge trade.

Q. Mr. Smith has given us an estimate of the coal on the river at seventy-five millions. How do you make it out?

A. Seventy-five millions of bushels for the year?

Q. Yes, sir.

A. The last year, I think, you will find it will run to a hundred millions.

Q. How do you know that; what record have you?

A. We know that by the amount of coal run into this market, Louisville, New Orleans, and Memphis. We have a kind of a register which we keep. We know everything which goes out each trip from Pittsburgh and along the river. We make up an aggregate amount from these figures. I think you will find that last year will cover a hundred millions. And that is supplied from the Pittsburgh works and Kanawha works, and all those places along the river.

Q. What proportion of it from Pittsburgh?

A. I think about three-fifths.

Q. To what extent does the Kanawha supply you with coal now?

A. That is on the increase very largely, and so rapidly that I cannot tell exactly. There is about ten millions from the neighborhood of Pomeroy run out in a year, and probably twelve millions and a half further down here on the Ohio.

Q. You have given us the quantity of coal on the river. Can you state the quantity of coal transported to Cincinnati by rail?

A. No, sir; I have no means of giving you any information on that point. For the last two years there has been considerable coal come in by rail. But previous to that not much except in cases of scarcity, when we have to resort to all kinds of means to get it. But there is a regular trade now opened up from Indiana here, that is running steady. To what extent, however, I cannot say.

Q. What was the cause of the scarcity last winter?

A. Low water and hard weather together.

Q. How many days in a year is the Ohio River obstructed from barge or flat navigation by ice on an average?

A. I have known it for six or seven years when we were scarcely interrupted at all, and then it would run six or seven years together when it was very severe every winter.

Q. In case it was severe, how many days or months would you be obstructed, as near as you can get at it?

A. If I had thought of coming here I could have brought you some more definite information, for I have had these facts on a record which I keep. I can tell about from the arrival of the tows until they come again. There have been times that it has run over two months that we never got a barge in, and that was caused by the ice in the winter.

Q. How long are you interrupted in this navigation by low water?

A. That varies, just about as much as the ice. This year we have had very little interruption. That is, from the lower part of the Ohio down, about six weeks here now I think.

Q. Can you give us the exact time by reference to your books and papers?

A. Very nearly.

Q. For the last eight or ten years?

A. Yes, sir; thirty years. I have the arrival of the different tows here along through those dates.

By Mr. CONKLING:

Q. Of what part of the river do you speak when it is closed by ice?

A. From here up. From here to Louisville, and even to the mouth of the Ohio.

Q. From Cairo up?

A. Yes, sir.

Q. And of what when you speak of low water?

A. It is about the same thing. Of course we can run to Pomeroy and that vicinity longer than we can to Pittsburgh.

Q. The worst shoals are above the Big Sandy?

A. Yes, sir.

Mr. SMITH. There is a part of the coal trade of the river which has not been referred to yet, and that is the lower Ohio. It has got to be a very large business. They have coal-mines right on the river, below Evansville, for instance.

Mr. COCHNOWER. That is principally confined to the supply of steamboats. They do not run it down of any consequence.

Mr. SMITH. They run it down to supply towns. I am interested in one where it is delivered at the landing at 10 cents a bushel.

Mr. COCHNOWER. That is coal of a very inferior quality. It is very poor.

By Mr. SHERMAN:

Q. What is the value of coal on barge or flats at Pittsburgh?

A. Seven cents.

Q. That is the general run?

A. Yes, sir; and that has been the price for three years.

By Mr. CONKLING:

Q. What kind of coal?

A. Pittsburgh coal.

Q. Bituminous coal?

A. Yes, sir.

By Mr. SHERMAN:

Q. How is it with the Kanawha and Pomeroy coal?

A. I think they are charging about the same price there for it loaded in boats.

Q. All of them about the same?

A. Yes, sir; we are charging 7 cents at Pomeroy, I know.

Q. What is the lowest point of coal production along the Ohio River above Cincinnati. Is it Ironton?

A. I forget the name of the works. The Sheridan Works, I think.

Q. From there on up to Pittsburgh it is a coal-field, as I understand?

A. There is coal all along from there on. Though there are mines above Pomeroy after you leave Syracuse and Hartford City a few miles until you get to Steubenville, there are no mines on the Ohio.

Q. There are some on the Muskingum?

A. I think not.

By Mr. CONKLING:

Q. All the coal that you speak of is bituminous coal; that is, none of it is anthracite?

A. That is so, sir.

By Mr. SHERMAN:

Q. Is there any cannel-coal along the Ohio River?

A. No, sir; there is up the Kanawha. They had some cannel-coal up here about Ashland a while, but I think it all run out. They had a little vein there.

By Mr. DAVIS:

Q. Is there a difference between the value on board of Pittsburgh and Wheeling and Kanawha coals?

A. The Pittsburgh coal brings more money than any. Of course it is a little more expensive running, and a little farther. There is a lockage to pay, &c., which you do not have on the other.

By Mr. CONKLING:

Q. But no distinction in the quality of the coal?

A. O, yes, there is a distinction. Youghigany coal sells generally from two to four cents higher in the market.

Mr. SHERMAN:

Q. You mean lockages on the Monongahela River?

A. Yes, sir.

Q. That is a private company, is it not?

A. I do not know whether it is owned by a private company or not. Governor Morehead has been president of it for a good many years. I think it is a private corporation.

CINCINNATI, October 29, 1873.

DEAR SIR: Inclosed I send you table of statistics showing the number of times each month for ten years, between 1863 and 1873, the Pomeroy Company has been able to run coal to Cincinnati.

Respectfully,

JOHN COCHNOWER.

HON. JOHN SHERMAN,
Saint Louis, Mo.

Dates of trips made from, October, 1863, to October, 1873.

1863.	Nov. 14	1866.	April 15	July 16	1870.	April 25	June 29
	Nov. 18		April 17	Aug. 10		May 3	July 3
Nov. 10	Dec. 23	Jan. 23	April 23	Aug. 11	Jan. 10	May 6	July 4
Nov. 16	Dec. 31	Feb. 1	April 29	Aug. 12	Feb. 12	May 8	July 20
Nov. 16		Feb. 22	April 30	Sept. 16	Feb. 19	May 15	July 22
Nov. 19	1865.	Mar. 2	May 4	Sept. 20	Feb. 26	May 22	July 31
Nov. 25		Mar. 5	May 7	Sept. 28	Mar. 3	May 29	Nov. 1
Nov. 26	Jan. 2	Mar. 7	May 11	Nov. 13	Mar. 12	June 29	Nov. 2
Dec. 4	Jan. 16	Mar. 13	May 16		Mar. 16	July 7	Nov. 4
Dec. 12	Jan. 19	Mar. 15	May 18	1869.	Mar. 22	July 17	Nov. 8
Dec. 16	Feb. 18	Mar. 22	May 25		Mar. 28	July 20	Nov. 13
Dec. 21	Feb. 24	Mar. 26	May 29	Jan. 14	April 8	July 24	Nov. 29
Dec. 23	Feb. 28	Mar. 28	June 4	Jan. 21	April 18	Aug. 17	Dec. 11
	Mar. 13	April 4	June 14	Feb. 2	April 30	Nov. 1	
1864.	Mar. 18	April 11	June 25	Feb. 9	May 7	Nov. 22	1873.
	Mar. 20	April 19	June 29	Feb. 15	May 12	Nov. 30	
Feb. 2	Mar. 28	April 26	Nov. 9	Feb. 22	May 17	Dec. 4	Jan. 25
Feb. 8	April 1	April 28	Nov. 14	Mar. 6	May 21		Feb. 4
Feb. 12	April 3	May 4	Dec. 11	Mar. 15	May 25	1872.	Feb. 6
Feb. 29	April 10	May 10	Dec. 16	Mar. 22	May 27		Feb. 15
Mar. 5	April 17	May 11	Dec. 17	Mar. 26	May 28	Jan. 2	Feb. 17
Mar. 9	April 20	May 14	Dec. 27	April 6	June 3	Jan. 4	Feb. 19
Mar. 14	April 27	May 19		April 28	June 4	Jan. 9	Feb. 22
Mar. 18	May 4	May 21	1868.	April 30	June 10	Jan. 15	Feb. 25
Mar. 24	May 6	June 8		May 4	June 20	Jan. 21	Mar. 4
Mar. 26	May 10	June 14	Jan. 1	May 7	June 21	Feb. 23	Mar. 12
April 4	May 14	June 19	Jan. 4	May 14	June 25	Feb. 24	Mar. 18
April 5	May 22	June 25	Jan. 13	May 24	Nov. 4	Feb. 29	Mar. 24
April 11	May 25	July 30	Feb. 24	May 25	Nov. 9	Mar. 6	April 1
April 16	June 3	Aug. 23	Feb. 26	May 31	Nov. 11	Mar. 7	April 4
April 27	June 10	Oct. 20	Mar. 3	June 5	Dec. 4	Mar. 14	April 14
May 3	June 17	Nov. 3	Mar. 7	June 14	Dec. 9	Mar. 16	April 24
May 9	June 28	Nov. 9	Mar. 17	June 30	Dec. 19	Mar. 19	May 1
May 13	July 1	Nov. 16	Mar. 20	July 6		Mar. 25	May 10
May 16	July 8	Nov. 21	Mar. 27	July 12	1871.	Mar. 28	May 15
May 26	July 14	Dec. 4	April 3	Aug. 6		April 5	May 17
May 28	July 20	Dec. 13	April 10	Aug. 10	Jan. 26	April 10	May 23
June 3	July 29	Dec. 18	April 14	Aug. 12	Feb. 10	April 11	May 25
June 8	Aug. 4		April 22	Sept. 15	Feb. 13	April 23	June 1
June 10	Aug. 14	1867.	April 30	Sept. 16	Feb. 16	April 27	June 8
June 16	Sept. 1		May 4	Sept. 21	Feb. 18	May 2	June 19
June 17	Sept. 6	Mar. 3	May 11	Oct. 4	Feb. 20	May 8	July 5
Aug. 24	Sept. 18	Mar. 10	May 16	Nov. 20	Feb. 22	May 13	July 12
Aug. 25	Nov. 1	Mar. 16	May 22	Nov. 25	Mar. 1	May 14	July 21
Sept. 1	Nov. 11	Mar. 21	May 28	Nov. 27	Mar. 6	May 22	Aug. 2
Sept. 14	Dec. 12	Mar. 26	June 1	Dec. 11	Mar. 11	June 1	Aug. 7
Sept. 23	Dec. 14	Mar. 27	June 8	Dec. 17	Mar. 17	June 8	Aug. 18
Oct. 6	Dec. 15	April 2	June 15	Dec. 27	Mar. 22	June 10	Aug. 26
Oct. 10	Dec. 18	April 4	June 22	Dec. 30	Mar. 29	June 15	Aug. 28
Oct. 15	Dec. 26	April 10	June 30		Mar. 31	June 17	Oct. 22
Oct. 21		April 13	July 3		April 8	June 21	

L. R. HULL, iron-merchant, examined :

Mr. HULL. Gentlemen, I was called upon without any notice, and I do not know that I can give you many facts in relation to the iron business.

By Mr. SHERMAN :

Question. We desire to know first the kind of ores that are found along the Ohio and the Kanawha Rivers, and along the line which we have been traveling over. What kind of ore is found at Ashland ?

Answer. Do you mean the kind of ore used at the furnaces ?

Q. No, sir; the kind which is found there—the local ores found in the neighborhood.

Mr. CONKLING. As distinguished from ores like the Iron Mountain ore which they bring from Missouri and other regions.

A. The ores used in the Hanging Rock region, in the neighborhood of Portsmouth and Ironton, are called by the furnaces limestone and block ores. Limestone ores make a neutral iron. The block ores mixed with the limestone make what they call coldshort. The Missouri ores are redshort ores; that is, Iron Mountain is very strongly redshort, and other Missouri ores are less redshort.

By Mr. SHERMAN:

Q. What do you mean by redshort?

A. I mean that when these ores are smelted and made into iron they are weak when hot—short when hot or red. They break easily when red, and the coldshort iron breaks easily when cold. The mixture of these ores produces what is ordinarily wanted; that is, a neutral iron, and you can understand it requires a good deal of skill to mix just a certain percentage of the ores to produce what is wanted.

Q. Is that the explanation of the use of the different ores?

A. Yes, sir.

Q. To what extent is iron ore brought to Cincinnati?

A. That would vary very much from year to year. I should say, speaking of Cincinnati, Covington, and Newport, on both sides of the river, that it would vary from sixty to one hundred thousand tons, without referring to any figures. That is one of the items I would have been glad to have posted myself upon somewhat.

Q. Will you state the cost of transporting that iron ore from the Hanging Rock region or the Kanawha region, or wherever you get it, to this point? How much will it cost per ton?

A. The cost of transporting iron ore from the Iron Mountains to Cincinnati would vary from three and a half to four dollars per gross ton of 2,240 pounds. The Tennessee iron ores are also used in mixture with the Iron Mountain ores, and would cost from three to three and a half dollars per gross ton.

Q. Do you use the Hanging Rock iron ores to any extent here in Cincinnati?

A. No, sir; the Hanging Rock ores are not transported to any great extent. They are used in the furnaces at Ironton and Ashland as a mixture with the Missouri ores. They transport from the Iron Mountain to their furnaces, and use about from one to two thirds of the Iron Mountain ores mixed with the native ores.

Q. Do you use any Ohio or Kentucky ores in your furnaces here in Cincinnati?

A. I never have known it, and I think I should have known it if the Hanging Rock ore had ever been brought here for that purpose.

Q. I speak of any Ohio ore. Do you get any from anywhere along in Ohio in the iron region besides the Hanging Rock?

A. Not in any large quantities; no, sir. Canada ore is brought here to some extent.

Q. Do you get any Lake Superior ore?

A. Lake Superior ore is used here occasionally to a very small extent in the mills. I do not think it has ever been used in the furnaces. That would be a very small matter.

Q. To what extent do you use here the pig-iron of the upper Ohio country?

A. The imports of pig-iron here amount to about 100,000 tons. How that would be divided I could not tell you without reference to figures.

Q. What is the general market of the pig-iron of the Upper Ohio country; where do they sell it?

A. Do you mean the furnaces between here and Pittsburgh?

Q. Yes, sir.

A. The market, for instance, of the Ironton furnaces is at Ironton, Cincinnati, and Louisville. They may occasionally send iron to the mills up the river at Wheeling and Pittsburgh, but not very largely I think.

Q. Are there any railroad-iron rolling-mills here?

A. Yes, sir; there are two mills, one on this side of the river and one on the other side.

Q. Do they make their pig, or do they buy it?

A. They buy altogether.

By the CHAIRMAN:

Q. What is the distance from here to the Iron Mountains, from whence these ores are brought?

A. By river do you mean?

Q. By whatever way they come?

A. By reason of low water, a large part of the ore which has been used here within the last two years has come by rail.

Q. From Saint Louis?

A. Yes, sir. The distance is three hundred and forty miles.

Q. These charges of which you speak are railroad charges, from three to four dollars?

A. No, sir; I was speaking of river freight. The railroad freight is \$2.80 per gross ton. The transfer at Saint Louis is 70 cents per gross ton. That makes \$3.50 per gross ton by rail. That is from the Iron Mountain of Missouri.

By Mr. SHERMAN:

Q. The distance by river is how far from Cincinnati to Saint Louis?

A. It is pretty nearly eight hundred miles.

Q. The distance is more than double, then, by river what it is by rail?

A. In bringing ore by river there is a great advantage to the furnace. Barges are laid right alongside of the furnaces, and it is taken up by machinery. If it goes by railroad, it costs the furnace, I suppose, a dollar a ton extra.

Q. What proportion of the ore here is brought by water, and what proportion by rail, as near as you can get at it, taking the year round? I mean from the Iron Mountain region.

A. I should think that, until within two or three years, probably 90 per cent. of the ore had come by river, the furnaces laying in their stocks when the river was up in advance. But within the last two or three years the railroads have been disposed to compete, and have given very low prices; \$2.80 for three hundred and forty miles is a pretty low price on a railroad.

Q. What proportion now, taking the present year as your guide, or last year, if you please, would be by rail?

A. That is one of the facts that could be ascertained, but I have not the calculations with me.

Q. Have you competing railroad-lines between here and Saint Louis?

A. Yes, sir.

Q. What are they?

A. The Ohio and Mississippi, the Vandalia, and the Indianapolis, Cincinnati and Saint Louis, I think the routes are called.

Q. Three different routes?

A. Yes, sir.

By Mr. CONKLING:

Q. In what parts of Ohio have iron-mines been found and worked?

A. The Hanging Rock region, about Portsmouth, Ironton, and Massillon.

Q. Where is that?

A. I do not know in what county Massillon is.

Q. Where in reference to the river?

A. It is off and away from the river. It is rather central. This Hanging Rock region includes I don't know how many counties; but it runs clear back. Everything is called Hanging Rock ore in that neighborhood, reaching as far out as they can call it so, because it is an ore that, made into charcoal-iron, has a very high reputation.

Q. What is the extent of the Hanging Rock region on the river? How far does it extend up and down the river?

A. I should think a hundred miles would cover it.

Q. Extending back from the river how far?

A. Perhaps sixty miles.

Q. The other region you refer to is how far from the river?

A. I do not know how far Massillon is away. There is a canal from Portsmouth to Cleveland.

Q. Did you speak of a third iron region?

A. There is the Mahoning region, which I am not familiar enough with to speak of.

Q. And you do not know the access by water there?

A. I think there is no canal through.

Q. How many iron-mines are there in this region working now?

A. In the Hanging Rock region, for instance, they get their ore by stripping. It is a very superficial way of getting ore. That is merely for their own purposes. Do you mean for shipping purposes?

Q. Yes; that will simplify it. How many iron-mines are there in Ohio from which iron is shipped or moved to other places or markets?

A. Do you mean ore?

Q. Yes, sir; iron ore.

A. I do not think the Hanging-Rock ore is used. I do not think it is shipped up or down the river.

Q. But it is consumed substantially on the spot, is it not?

A. Yes, sir.

Q. How is it as to the other region?

A. I do not think the Massillon is shipped.

Q. Then it is used up by furnaces there?

A. Yes, sir.

Q. They send manufactured iron from there?

A. Yes, sir.

Q. And from the two regions to which you have referred, one being on the river, and the other being connected by canal, they have water-communication?

A. Yes, sir.

Q. Then they use ore which is brought to these furnaces from other places, and conspicuously from the Iron Mountain, Missouri?

A. To explain. The Hanging-Rock iron, so called, is a charcoal-iron altogether. There are, say, fifty or sixty furnaces. These charcoal-furnaces use no foreign ore whatever. It is comparatively few furnaces which use bituminous coal or coke in smelting ore, that use Iron-Moun-

tain ore, and mix with it the native ores, which they buy near them—the Iron-ton and Ashland, and furnaces in the neighborhood of Wheeling, and so on.

Q. How many are there, then, of these bituminous-coal furnaces which use foreign ore?

A. There are two here. There is one large double-stacked furnace at Iron-ton and one at Ashland, and above that I could not give you the furnaces in detail. There are a large number above.

Q. Is there any difficulty in obtaining the complement of foreign ore during the season of the year when the river is opened both by reason of the absence of ice and low water?

A. The Iron-Mountain ore is a very high-priced ore, and there is great difficulty in obtaining it for that reason.

Q. But the point of my question is this: we will assume that the river is free from ice and free from low water eight months in the year; is there any difficulty during that eight months in accumulating at these furnaces all foreign ores which they work? I mean so far as transportation is concerned.

A. Yes, sir. The difficulty is that during that period it is impossible to load the boats at the Iron-Mountain dumps.

Q. During which period?

A. During the period of high water.

Q. Why is that?

A. It is because only a limited number of barges can be loaded there, and steamers often have to wait four to six weeks, I think I am safe in saying.

Q. For a load?

A. Yes, sir; and they have to lay by for others. They have to wait and take their turn.

Q. So that if they run to their fullest capacity for two-thirds of the year it is not enough to do the business?

A. I would not put it exactly in that shape. I only say that as the business is actually carried on, there is great difficulty in getting their supplies by river for that reason. When the low water comes on there is still left a large quantity of ore.

Q. So that, if I understand you, a given equipment of boats which, if they could load all the year round, would be sufficient, are insufficient if they run for only eight months; but there is nothing in the nature of the ore, or in the outcome of the ore, which would prevent them from bringing it in the eight months if you had sufficient transportation equipment to bring it in that time?

A. Is it a fact that there are, eight months in the year?

Q. I take that time as a given time. I suppose it is so from the statement made here. The gentleman who preceded you said that there would be some low water for six weeks, and ice six weeks sometimes. There would be ice sometimes for a very short time for a series of years, so that to average it I assume eight months of free navigation.

A. I should not think there would be anything like that.

Q. Well, say six months. But that is an unimportant thing for my question. I want to find out what the difficulty is in getting the ore by water to the point you want it. Suppose it is six months; what is the difficulty in getting it in that six months when there is competent navigation?

A. The difficulty would be that there are very few furnaces who are able to furnish the capital to move within one-half the year the stock

that they need for the entire year. It would make too great a draft on the capital, if it was required to be held.

Q. I wish to find out what this difficulty is with the free river, six months of the year, of transporting and accumulating ore enough to run the furnaces for a year, and I wish you would state all the difficulties that there are.

A. I should think that within the last year—and I am merely giving this in a conversational way—I should think there had been six months during the season that it was impossible to bring ore from the Iron Mountains to Cincinnati. I mean six months at a time. Mr. Sherlock, how would that be?

Mr. SHERLOCK. I think you overestimate the time.

By Mr. CONKLING:

Q. You are troubling yourself with an element which is not embodied in my question. I will assume now there is free navigation for only six months; or, if you wish me, for only five months. Fix any time you please, and then I want you to tell me the difficulties during that time of buying and transporting all the foreign ore that any furnace, charcoal or bituminous—if both use it—want to use for that year.

A. You can understand that the Iron Mountain Company work twelve months in the year, and the ore can be taken away about as fast as it is mined only. There would then be difficulty in transporting ore in five months that they would mine in twelve months. During a high-water season, boats are required to lie by so long that they are frequently thrown into the ice and cut down by the ice, and that has been done repeatedly year after year. There were quite a large number last season that were detained. It was impossible to load them and get them off before the ice cut them down last winter.

Q. Are there any other difficulties that you know of?

A. I do not think of any others. Of course there is the difficulty of low water, and the difficulty of the canal at Louisville, the general difficulty of getting through the river.

Q. And except for what you have stated, you know no reason why the foreign ores should not, during the season of navigation, be brought in sufficient quantities to run the furnaces for a year?

A. I do not think of anything just at this moment.

Q. Now as to the outgo of the iron. During what time of the year is the iron sent from these furnaces?

A. Pretty regularly all the year round, except during low water or ice. I am speaking now more particularly from the Hanging Rock region here. The Hanging Rock region is a very large source of supply for pig-iron for this market.

Q. You do not know, I think, the proportion of that iron that goes by rail or water?

A. No, sir.

Q. Speaking of that which goes by water, is there any reason for its going one part of the year more than another except the inconvenience of holding stock?

A. These charcoal-furnaces are out of blast for a period of about three months.

Q. When is that?

A. They go out of blast, ordinarily, from January to March.

Q. It is during that time that the ice occurs, if at all?

A. Yes, sir; it is very apt to, during that period.

Q. So that while they are in blast they are troubled by nothing except low water, when that occurs, as to the sending away of their iron?

A. Their iron, for instance, made up to January is not shipped; cannot be shipped; is not always shipped; may be held by the market. If there is a dull market the furnaces may accumulate from September to January. December is usually a very dull month in the market, and November begins to be a very dull month. So that they are not obliged to hold it there, because they could ship it to Cincinnati, but it would cost an additional expense, and their general custom is to hold it until about the time that the market demands it, so that it is governed from year to year by the state of the market.

Q. But as to the actual transportation, the water furnishes abundant facilities for sending it away. That is true, is it not, as to the bituminous iron—iron made at bituminous-coal-burning furnaces? There is abundant opportunity while the water is up and while there is no ice, to send away the whole product of their mills, except for the inconvenience which it might be to hold it at times or to send it at times, when if they were governed exclusively by the market they would not do it. That is the truth about it, is it not?

A. When there is high water in the Ohio River, I would say that there was no limit to the amount of the iron ore that could be transported upon it if you had plenty of steamboats and barges.

By Mr. SHERMAN:

Q. How far is that iron ore mined from the place of delivery on barges? What is the distance from the Iron Mountain to the river?

A. It is sixty or eighty miles.

Q. Saint Louis is the terminus of the railroad?

A. At Carondelet, just below Saint Louis.

Q. Have they facilities for accumulating large supplies to wait the rise of the water at the landing at Carondelet?

A. They usually have. Of course it varies very much. They usually have quite a large quantity at what they call the "dump," which is at Carondelet, and the iron ore is just pitched over the bank of the river.

Q. Do you know how much supply they could accumulate there—how many days' or weeks' supplies for shipment on barges in places prepared for that purpose?

A. I could not give you exact information on that subject. A very large quantity, I should think.

Q. As a matter of course, the shorter the season of navigation, the higher would be the prices usually charged by the boats during a shorter season. It is a question of cost, then, as to whether the cost of transportation will be increased by the shortness of the season?

A. Yes, sir; and by ice.

By Mr. CONKLING:

Q. One word as to that. Is that quite true? Suppose you had on the Ohio River an equipment of boats sufficient to do all the business, would not competition have the same effect of reducing prices if the season of navigation was eight months that it would if it was ten?

A. I think you are supposing a state of facts that never existed.

Q. That may be. I do, and I am aware of it, because I understand you to say that you are short of running-equipments on the river. But suppose you had boats enough on the river during a given season to do all the transportation that was to be done in that season, would not competition reduce prices just as far if the season of navigation was eight months long as if it was ten months long?

A. I think some river-man would be more competent to give that information.

Q. But is not that a general commercial question? Do you need any special knowledge of the river to know how that is? If a given amount of service is to be performed, and there are people enough to perform it, competing with each other, does not competition do its whole work whether the period within which it is to be done is one hundred days or ninety days?

A. I would still say that the facts are, that the steamboat men are of course looking at the amount of freight that is to be moved on the river, and also to the amount of transportation that is to move it, and prices are governed by the limited period that there is in which to do that business. I do not see how I could change that.

Q. I have no doubt in that aspect it is so, but I was seeking by my question to divide, if I could, the effects of difficulties in navigation from the effects of the shortness of boats with which to move commodities. They are very separable things. I was seeking to point out the distinction between the two. I will not press it.

Examination of Mr. THOMAS SHERLOCK.

By Mr. SHERMAN:

Question. Mr. Sherlock, we desire to obtain the cost of transportation as far as we can along the whole line of river from Pittsburgh to New Orleans, and the fluctuations of cost and causes of the fluctuations. I understand that you deal in steamboats chiefly, and not in barges and floats. What is the charge per ton for ordinary number four—heavy freight—from Pittsburgh to Louisville or Cincinnati?

Answer. The general charge from Pittsburgh to Louisville and Cincinnati is from three to four dollars per ton on fourth-class freight, or say from two and a half to four dollars.

Q. Give the distance, if you please.

A. It is about six hundred and fifty miles from Pittsburgh to Louisville, and about five hundred miles from here (Cincinnati) to Pittsburgh.

Q. What class of merchandise or products are covered by this transportation rate of from \$2.50 to \$4?

A. It will cover almost everything that is carried on the river; light freight, heavy freight, rolling freight, and sack freight; everything. We do not discriminate on the river as railroads do, from first, second, to third and fourth class, except where we connect with railroad lines and are governed by their rules.

Q. What is the freight from Louisville to New Orleans?

A. It is generally about the same as it is from here to New Orleans.

Q. What is it from Louisville to New Orleans?

A. Just now the river has commenced rising, that is, within a few days. We have what we call a very good river here now. There is probably 16 feet of water between here and Louisville; probably 12 feet all the way out of the Ohio River. Freight now are from seven to nine dollars per ton to New Orleans from here. The distance is one thousand five hundred and fifty miles.

Q. What is freight from Pittsburgh to New Orleans?

A. It would probably be \$2 a ton more than that.

Q. Making it \$9 per ton?

A. Yes, sir; from nine to eleven dollars.

Q. The distance is two thousand miles?

A. Yes, sir. These prices are now the asking prices. Prices will be still lower probably in a very few days, as soon as the yellow fever gets out, so that boats are willing to leave here and go down the river. It will reduce the rates probably from one to two dollars a ton from these prices.

Q. Where do you take on this transportation?

A. At Cincinnati.

Q. I mean what is your habit as to stopping for transportation at any point?

A. We stop everywhere as long as we can get a pound of freight, and as long as there is water to carry it and capacity in the boat.

Q. Is there any limit as to the quantity for which you will not stop? About how much would be the lowest a boat would stop for?

A. That depends very much on the size of the boat. We stop between here and Louisville for a dollar. That is outside of the regular landings. We have fifteen regular landings between here and Louisville, at which we always stop. In the New Orleans trade a heavy boat thinks that if she does not get \$10 worth at a landing she is losing money, although they very often stop without getting anything.

Q. Do you carry heavy articles like pig-iron on the steamboats?

A. Yes, sir; we carry anything that we can haul anywhere.

Q. To what extent is pig-iron and heavy articles carried on the steamboats?

A. Between here and Louisville there is a good deal of it carried. There is a good deal comes up the river. We bring a good deal of Tennessee pig-iron from Louisville here.

Q. Do you carry iron ore?

A. Very little. Sometimes some comes in by the Louisville and Nashville Road which we bring here, and sometimes out of the Tennessee River by steamboat, but not a great deal of it. I do not know whether you understand, but iron ore is a very costly thing to handle, because it is in small pieces and takes a good deal of labor to handle it, and labor is one of the great elements of cost with us.

Q. Your carrying trade, then, is the general productions of the country, farming and manufacturing?

A. Yes, sir; whisky, flour, pork, sugar, molasses, all the manufactured articles of this country.

Q. To what extent do railroads compete with you for this carrying-trade from Pittsburgh through?

A. I have not been interested in the trade above Cincinnati for a good many years. My business is all from Cincinnati down to Louisville and New Orleans.

Q. To what extent do the railroads compete with you in your business from here to Louisville?

A. They compete with us very seriously. They divide the business with us.

Q. Do they divide the freightage equally?

A. No; I think not. I think we carry more freight than either of the railroads, and probably more together.

Q. How about the passenger traffic?

A. I think we carry as many passengers on the boats, as we are running them now, as either of the roads do; not as both, but as either.

Q. What is your charge between here and Louisville for passengers?

A. We charge \$3.50, which includes a state-room and the dinner, supper, and whatever meal they take on the boat.

Q. What does the railroad charge?

A. The same price.

Q. Without supper of course?

A. Yes, sir.

By Mr. CONKLING:

Q. And without any sleeping-car?

A. Yes, sir.

By Mr. SHERMAN:

Q. The distance is how much by water?

A. One hundred and forty-two miles is the post-office route by water. One hundred and fifty miles we call it.

Q. How much by rail?

A. I think by the short line it is one hundred and ten miles, and on this side of the river one hundred and twenty-seven miles.

Q. Is the transportation business on the river on boats increasing or diminishing? I mean on the steamboats.

A. That depends altogether upon our crops. I think the transportation business of the river has not fallen off in the last two or three years. I think it is rather increasing; but I think it is the gradual increase of the country. I think the railroads are taking their fair share all the time, and the steamboats probably are getting their fair share of freight. Now the rates of freight from here to New Orleans vary very widely indeed. The rate of freight on Friday last by rail from here to New Orleans, we connecting with the rail at Louisville—the Louisville and Nashville Road and their connections—was 78 cents per hundred pounds on bacon. The asking rate of freight by steamboats here was 40 cents per hundred pounds at the same time. But during low water steamboats could not carry the freight at all. They could not carry such an article as bacon. It took too long. They could not get out of the river in fact, even the very lightest kind of boats. There is nearly always more water between here and Louisville than there is above Cincinnati or below Louisville in the Ohio River there; always is in a low stage of water.

Q. Is there any increase of freight in the railroads during low water?

A. Yes. The railroads carry nearly all the freight destined for the south.

Q. What was the price during low water when you could not run?

A. I think the highest rate they got on fourth-class freight was 82 cents from here.

Q. How much additional was that to the price before?

A. The price last Friday was 78 cents. The price when steamboating fairly opens will probably by rail sink to 50 cents.

Q. What did you say was the highest price?

A. Eighty-two cents.

By Mr. CONKLING:

Q. What had it been before the water fell?

A. I know of shipments at 55 cents. In order to carry freights they must compete with the river. They have the advantage of insurance, which from here to New Orleans is 1 per cent. by river. The shipper shipping his property by river has that additional cost to pay over the freight if he ships by steam, which gives the railroad a higher rate. They can charge a higher rate and yet be in the market with the steamboat men.

By Mr. SHERMAN :

Q. You tell us you prorate with railroads. Upon what basis do you prorate; how many miles of river for how many miles of road?

A. I think our route from here to Louisville is called one hundred and twenty-two miles, prorating. We insure that property; we cover it by insurance ourselves. The bulk of what we now carry is destined for the interior of Alabama and Georgia, running over the Louisville and Nashville Road and over their connections. It is shipped here in Cincinnati, and the through rate is fixed here; the same by the Ohio and Mississippi Road, running to Louisville, and by what is called the Short-line Road, on the other side of the river, and our line of boats. The rate is the same by all lines, but in order to put ourselves on the same footing with the railroads, we insure that property, and make ourselves liable in case it is lost.

Q. Then you are allowed for one hundred and twenty-two miles of the whole distance?

A. Yes, sir.

Q. While the real distance carried by you is about one hundred and forty miles?

A. Yes, sir; we call it that.

Q. To what extent do the Louisville Canal and the falls at Louisville obstruct the navigation of the Ohio River? I mean in the time and cost of getting through the canal, &c.

A. When the river is up so that boats can cross the falls there is no obstruction at all. When the river is down so that they cannot cross the falls, or when it is so high that they cannot get under the bridge down there, they must go through the canal. The charge for canal-tolls is 50 cents per ton, ship-carpenters' measurement, whether the boat has any cargo on board or not.

Q. How much is that for a steamboat of the ordinary capacity; or, in other words, what is the tonnage of your ordinary steamboats?

A. Seven hundred tons. That would be \$350.

Q. Is that for going one way?

A. Yes, sir.

Q. Do you pay that in money at each trip?

A. Yes, sir; that has been the rate for some eight or ten years. We have one boat whose canal-tolls down and back are \$984. To make a trip from here to New Orleans and back we pay \$984 canal-tolls.

Q. What additional cost does that obstruction make in a ton of freight passing up or down? I mean on an average. As a matter of course, sometimes the boats are empty and sometimes full.

A. If a boat is full and laden—most of our boats carry a great deal more than they can measure—a boat measuring 700 tons carries 1,200 tons, but she pays on the 700 measurement. If she goes through with 1,200 tons it reduces it, say, to 30 cents a ton on the freight itself, while if she goes through the canal measuring 700 tons with but 350 tons of freight it makes a charge of \$1 per ton on freight.

Q. I wish to get the average.

A. I should put the average going and coming for our boats for the last year or two—coming up with very light freight—at 65 cents per ton on the cargo carried.

Q. Does that apply to all barges and all boats of every kind?

A. O, yes.

Q. Including coal-boats?

A. No, sir; they have a different rate on coal-boats. I do not know what that is.

Q. But that is the charge on all steamboats going through?

A. Yes, sir.

By Mr. CONKLING:

Q. If the steamboat has other boats than coal-boats in tow, does the 50 cents per ton apply to the tow or only to the steamboat?

A. Only to the steamboat. There is a different rate for all boats.

By Mr. SHERMAN:

Q. You say you do not know that rate?

A. No, sir; I have not been in the towing trade at all.

By the CHAIRMAN:

Q. How are the relative freights on the roads and on the river? Are they gaining or losing in favor of the roads as against the boats?

A. In the ordinary stages of water I should think four-fifths, and probably a larger proportion than that of all the freights carried from Cincinnati and Louisville and destined for any place along the Mississippi Valley are carried by steamboats. It has been spoken of for some time. If we had 6 feet of water in the Ohio River at all seasons of the year, freight during good stages of water would be lower than it ever has been, because we would only be compelled to have one class of boats. Now we must have a class of boats for low water and a class of boats for medium water, &c. The low-water boats are of very little account to us when there is 10 or 12 feet of water in the river. They cannot compete with the larger boats at all.

Q. What are the names of these competing roads running south from here or Louisville?

A. I am talking of the Ohio and Mississippi Road from here to Louisville, and the Short-line Road from here to Louisville. After we get there we have but one road to run over; the Louisville and Nashville Road controls the whole southern system.

By Mr. DAVIS:

Q. Who is that in control of?

A. Thomas J. Martin, of Louisville, is the acting president. All the freight destined for the South here during low water goes over the Louisville and Nashville Road when the river gets so that it cannot be carried by it. That is the reason that every once in a while we have a block, as we call it, which lasts probably a week or ten days, when they cannot carry any freight at all, and cannot do anything. It is a single-track road.

By Mr. CONKLING:

Q. When you spoke of stopping for a dollar, you meant that the boat will stop for anything which will pay a dollar after it is put on?

A. Senator, a boat will stop for anything for which she has capacity to do any business for, unless she is full, whenever she is hailed.

Q. But when you speak of "paying a dollar," you mean she will stop to take on anything which will pay a dollar freight after it is taken on?

A. Yes, sir; or a passenger who will pay a dollar. Now, in what we call a New Orleans boat, if you go down on the Mississippi River, the lowest charge for which they will stop is, I think, \$5.

Q. And that charge is satisfied if something is put on which pays \$5 freight after it is put on?

A. Yes, sir.

Examination of WILLIAM E. MERRILL, major and brevet colonel, United States Engineers.

By the CHAIRMAN:

Q. You are engaged in the surveys and improvements of the Ohio and Kanawha Rivers?

A. Yes, sir; I have charge of both rivers.

Q. Be good enough to give the committee any information which you have as to the character of these improvements, their cost, and what is necessary to make navigation such as is required?

A. I only took charge of the Kanawha River this spring, and the appropriation was very small. It was \$25,000. It was the first appropriation which the Government has made, so that nothing has been done by the Government previously on the Kanawha. The river is under the control of the Kanawha board, which is a State organization. I think it is not a company expecting to make money out of the institution, but in some way it is controlled by the State, and many of the officers are *ex-officio*. I don't know exactly how it stands. They own two dredging boats, and hitherto have limited their work on the river to trying to improve the natural channel by dredging through the shoals, making narrow chutes, so that boats can go through in low water. When this work was assigned to me this spring I consulted with the board to know what had best be done. I wanted of course to make my work fit in with theirs. They said they were doing all the necessary work by dredging, and they should prefer we would build riprap dams and dikes and remove some rocks out of the river. I have governed my work accordingly. I suggested to them that I thought it would be advantageous not to spend much money in these temporary improvements, but to strike at once for a radical improvement, and, therefore, I proposed holding this \$25,000, provided the Government authorities would permit it, until more money was appropriated for the river, and then to strike at once for building a lock and dam, and determine in advance that we would spend no money on anything but a radical improvement by slack-water. They, however, consulted with the persons most in interest, and they said that there was such a pressing demand for some temporary alleviation now, that they preferred we should spend the money as we are now doing.

This profile will show the state of the river, the elevation from the mouth up to the Great Falls, and of course it is a very simple thing by comparison to decide, in case a slack-water system is desired, how many locks and dams would be required of any given height.

Whatever radical improvement we have on the Kanawha should be similar to what we have on the Ohio.

If you wish me to take up the general subject of the radical improvement of these two rivers, I might as well discuss the Ohio alone, because the Kanawha improvement would be the same. The navigation that we want to benefit the Kanawha is precisely the same that we wish to benefit the Ohio, the conditions only varying with the magnitude of the rivers.

I will therefore pass to the discussion of the Ohio River. As you are aware, this matter has been discussed a great deal, and a great number of plans taken up and analyzed by my predecessor, Mr. Milner Roberts, a United States civil engineer, who had charge of the river. A convention was held here about two years ago by the parties interested in the navigation of the Ohio, and it was, after a pretty general discussion, thought best to organize what may be called a standing

convention to discuss the subject, and the convention to consist of five delegates from each State having waters which were tributary to the Ohio. There are seven such States, and there were thirty-five delegates appointed. These delegates met from time to time, and I have always, with one exception, met with them. The whole subject has been pretty thoroughly discussed in that convention.

Every possible plan, and I may say many impossible plans, have been discussed. The last meeting of the convention was held about a month ago in Louisville. The thing now has settled down to a definite opinion, and the convention, and I think the Engineer Department, and I know myself, all agree that there is but one plan which is at all feasible. There are only two possible plans that could give the required amount of water. The radical improvement would demand, as Mr. Sherlock said, not less than six feet, and possibly seven feet. There are but two possible ways of getting that. I will mention a third, however, incidentally, and even a fourth.

People have thought that they could get water from Lake Erie; but the Ohio River is higher than Lake Erie, above Parkersburgh, and below Parkersburgh it would be impossible to do anything. The supply would have to be by a through cut, and that through a ridge of not less than 500 feet high, and fully a hundred miles wide, which would have to be cut through, of course, to that depth. It could only be done by a tunnel at least one hundred and fifty miles long. But suppose we could have that tunnel? Water will not run in a cut unless it has some slope, and in a narrow channel the slope could not well be less than 2 feet to the mile. You might call the distance two hundred miles. It is certainly not less than that from any point which can be considered, and you could not give less of a slope to this channel, to make any kind of a supply of water, than 2 feet to the mile. The upper end would require to be at least 400 feet higher than the lower part. Lake Erie is 565 feet above the ocean, and consequently would only supply a point two hundred miles distant that was 160 feet above the ocean, and as the river at Cairo is 275 feet above the ocean it is manifest that no point in the Ohio could be reached by that method. Knowing this impossibility, it was proposed to get the water by pumping into Lake Chautauque. It is only eight or nine miles from Lake Erie to the western extremity of this lake. It is in the southwestern corner of New York, but it is about 750 feet above Lake Erie, and the ridge which forms the water-shed between it and Lake Erie is probably 50 feet higher. There would be an elevation of not less than 800 feet to which water would have to be lifted, and of course by several lifts. Although it was a very wild plan, nevertheless it was seriously brought up, and I made calculations upon it. I took the expense of pumping the water here in Cincinnati, as the pumps are running to their full capacity, and only stop for repairs, being a fair criterion, and I found that you could raise four hundred and fifty gallons up to the reservoir, an average lift of 160 feet, for one cent. Of course, that was the annual cost, exclusive of any expense of distribution, which I did not take into account. On that basis, which I thought was sufficiently low, and taking the cost of these works as a standard, and multiplying the lift by five, assuming this lift to be 160 feet, and the whole lift 800, that having five lifts, I found it would take \$125,000,000 a year to lift the amount of water required to supply 6 feet of water in the Ohio River, at Wheeling, taking the estimates of Mr. Ellett made years ago.

I found that the first cost of the buildings and machinery would be about \$625,000,000, making for the first year \$800,000,000. I thought

that was sufficient to prove the impossibility of such a scheme, but it seems somebody found a pump claiming to do better. I estimated on that basis which may be considered the maximum possible, and even then, on that, I could not give a less annual expense than \$4,000,000, and the first cost of \$45,000,000. That stopped that plan of course.

The third possible plan is the plan of reservoirs suggested by Mr. Ellett. That plan was discussed by Mr. Roberts quite thoroughly in his report. He was very familiar with the country around the headwaters of all the tributaries of the Alleghany, the Monongahela, and pretty nearly every stream emptying into it. He was personally familiar with them from his surveys in that country for many years in canals and railroads. He said it was impossible to establish six lakes of the kind Mr. Ellett said was necessary.

He proposed finding where there was but a small slope and a long valley, and building dams not less than 100 feet high. He expected to use the whole of the water. He called the average depth 50 feet, running up, of course, to nothing. Mr. Roberts showed to me conclusively that it was not possible to find six localities for such lakes, and he did not believe it was possible to find localities for smaller lakes, to have a greater number of them.

But besides that, you could not under any circumstances expect to get a proper supply of water unless you had dams at least one-half that height—50 feet. To build a dam 50 feet high in a running stream is excessively difficult. Reservoirs even built perfectly dry, where you can watch every stone, sometimes burst, and even when you select your ground for the very purpose it is difficult to prevent water under such a heavy pressure of 50 feet—a pressure of about twenty-five pounds to the square inch or one hundred and forty-four times that to the square foot—it is almost impossible to prevent water at least getting around the sides even if not going through the dam. Besides, with the smaller reservoirs, you would have to have several on one stream, and if one of them were to break, which might happen very easily because it would be very difficult to make a waste-weir which would be adequate for every contingency, the result would be very disastrous. Take for instance the case of a water-spout bursting in the mountains. If one of these dams were carried away by that, every other one on that stream would be carried away, and you could hardly have less than a mass of water a hundred feet high sweeping down and destroying everything in the whole valley, and not within manageable reach until down here. If it broke in floods it would desolate the whole valley, and it would be hard to tell where it would stop.

Mr. Ellett's basis for calculating the expense of such a work was on the Anthony's Creek reservoir on the Kanawha, in an exceptionally favorable site, and yet it has never been built. It is the Anthony's Creek reservoir proposed for filling the summit-level of the James River and Kanawha Canal. I think the expense by reservoirs is certainly not less after all than the entire cost for the slack-watering of the Ohio River, that is, assuming that the six big lakes could not be built.

And that reduces us down to the only possible plan that is left, of slack-water. I think the reservoir plan is impracticable and excessively dangerous, and it would be very difficult also to manage. You would have to have telegraph lines and the utmost degree of watchfulness, and thorough knowledge of the river, to be able to regulate the supply. Beside that, all the railroads running up these valleys would certainly jump up 100 feet. It would change miles and miles of railroad, and would also destroy manufactories, farms, wells, and navigation also.

If the dams would always stay full, it would be possible to get some kind of chute or lock, or something, for navigation. But supposing the water were 20 feet below the level, there would be no way of getting lumber. These are some of the objections.

That reduces us to slack-water. The great advantages of the slack-water plan are that it is simple; its expense can be calculated with as much accuracy as any work in water can be, and I think I ought to state here that any work in water is subject to contingencies which cannot be foreseen, and therefore exact estimates are simply impossible. A bed of a stream is itself your reservoir, and it gives all the water you need, and not one drop more. You simply retain what is needed for navigation. The stream will always supply the lockage, and even if it should not run over the dam, still you will have plenty of navigation in the pools. It is easily built; there are no excessive dangers, and it is at present in use on the Monongahela River, where it fully meets the wants of the very class of navigation which demands the improvement of the Ohio, and that is the coal-trade.

There is but one thing, however, to be said about applying it to the Ohio. The coal-trade of Pittsburgh is a unit in demanding that nothing shall be put on the Ohio that will in any way interfere with the full and free use of the stream, as they have it now when the water is high. They claim that it is impossible for them to stop at every lock, break tows, and take them through and re-form them. My own experience with coal-tows makes me think the objection is a good one. I came down from Pittsburgh to Cincinnati on a coal-tow on purpose to see how they got along. To that objection we reply that it is perfectly feasible to make an opening 200 feet wide or more, if necessary, although I think 200 would be enough in one of these dams, cutting it down 4 or 5 feet, so as to take off the lift almost entirely. Have this chute opened and shut by a hydraulic gate, manageable by one man, the force being the force of the water always to work it, and through which these boats can pass with just as much safety and with as little detention as they can in the open river. In returning they return empty, and there is no difficulty at all in their breaking up their tows, because they are light and are not so tightly held together, and can re-form their tows.

It would save time, because they now come down loaded on a rise, and they go back empty; but a boat draws about 3 feet, and very often the rise, before they can get back to Pittsburgh, is altogether gone, and the river is dead low. They sometimes have to lie by for months and months, scattered along the river, until the next rise takes them back to their harbor.

But this movable hydraulic gate, on which the whole thing hinges, is an experiment. Means for accomplishing this purpose in a little different way has been used on a small scale in various rivers in France, Germany, this country, and the East Indies, but nothing quite analogous to what we have to build for the Ohio. The matter has been under the charge of a board of engineers, consisting of General Weitzel and myself, for a long time. We sent in a preliminary report to the last Congress, which unfortunately was not published, and no action was taken. In that report we stated our positive belief that it was perfectly feasible to make such a hydraulic gate, but before committing ourselves to the great cost of applying the slack-water system with this hydraulic gate to the Ohio, we desired to make an experiment on a smaller scale to some other stream. For this purpose the president of the Monongahela Navigation Company offered us the use of the lowest dam on the Mononga-

hela. They are exceedingly interested in the success of the experiment for their own local reasons.

The harbor of Pittsburgh is a natural pool, such as you noticed at Charleston, the bar below there making a natural pool for about ten miles. There is such a natural pool at Pittsburgh, but it is altogether insufficient to accommodate the number of coal boats and barges which lie there loaded and waiting for a rise. The consequence is, that they are compelled to keep a large number of their boats and barges in the artificial pool of the Monongahela above dam No. 1. When the rise comes, especially a small rise, it passes by so rapidly that they find it simply impossible to get their boats and barges out in time to take advantage of this rise, and, consequently, they cannot get to market when they are all ready otherwise. Therefore, the company proposed trying this experiment on the dam No. 1. If this chute, with the hydraulic gate, will answer there, it will relieve them immensely, and it will relieve the harbor of Pittsburgh immensely, because boats will then be able to stay up the Monongahela in the pools and come down as rapidly as necessary, in case of a rise, without any delay. But now, between boats coming up and coming down, a great many of them miss the rise altogether and cannot get down. The company, therefore, are very willing to have this experiment tried in their dam No. 1, and they have officially offered to pay half the cost thereof. We estimated that the cost would be \$80,000, and therefore asked for an appropriation of \$40,000, but unfortunately our report did not go to Congress, and no action was taken thereon. A report is, however, very nearly ready for this present Congress, in which we go into exact detail, giving exact plans and estimates, and again ask permission to try this on the Monongahela. I have no doubt but what it will be a perfect success; and if not a perfect success on the exact plan we recommend, there are other plans that will accomplish the object. But before we commit ourselves to the radical improvement of the Kanawha or the Ohio we think it is essential that this thing should be tried on a working scale on some smaller stream; and that is the condition in which the radical improvement of these two rivers now stands.

I do not know whether it came to your ears or not, but there is some opposition in the Kanawha to any slack-water navigation on that stream. They do not, however, know this possibility; and when they know that they can go down-stream with their coal-tows with just as much ease as if the river were entirely open, and at the same time be able to go up-stream at all seasons, thus making a continuous navigation the year round, I think they will be unanimous in demanding it. There will not be a word of opposition except some man who does not believe we can do it. But if we show that we can do it, there will be no dissenting opinion.

By the CHAIRMAN:

Q. What is your estimate of the expense of the improvement of the Kanawha and the Ohio in the way you suggest?

A. On the Kanawha I have not made a detailed estimate; I have had the river such a short time. The great difficulty in the Kanawha is the difficulty of foundation. The rock, as far as I know, outcrops in the bottom of the river in a very few places, and that adds very much to the expense, and will probably limit the height. But I should judge it would be safe to say \$300,000 to a dam, chute, and one lock, which would probably supply the up-stream navigation; the chute itself supplying the down-stream.

In all schemes for the James River and Kanawha Canal, of course, they look to the improvement of the Kanawha River, and all of them have recommended that above the mouth of Paint Creek there should be locks. The fall of the river for the upper sixteen miles averages nearly 3 feet to the mile, a slope altogether beyond our powers of remedy in any other way. Below that they have recommended open navigation at an estimated cost of about \$2,000,000 for the whole.

By Mr. CONKLING:

Q. How many locks would that make on the Kanawha?

A. Four from Paint Creek up to where it connects with the canal—that is, to the falls; and from there down it depends on the height we give the locks. The height at Paint Creek is 68 feet. If you give a 10-foot rise, that takes seven locks.

Q. In all?

A. From there down. I do not know where the locks above this connect with the canal. The foot of the Great Falls is 108 feet above the mouth of the Kanawha.

Q. From the canal to the mouth of the Kanawha how many locks are there?

A. I am not familiar with the James River and Kanawha Canal at all, and I do not know how they connect up here. I simply know that they estimate for four.

Q. Then how many from the falls of the Kanawha to the mouth of the river?

A. From the foot of the falls it would require eleven if they are 10-foot rise.

Q. And from the top of the falls?

A. From the top of the falls it would require $13\frac{1}{2}$ feet exactly, with a 10-foot rise; but of course you could apportion it to have either 10 or 11 feet.

Q. What would be the expense per lock?

A. The expense per lock and dam it is difficult to tell. They estimate it at \$212,000, and they had opportunities for investigation which I have not. I presume you might take their estimate as accurate.

By Mr. SHERMAN:

Q. The estimate of the cost of the improvement of the Ohio River according to the plan?

A. Yes, sir.

Q. Have you gone over these estimates to your satisfaction?

A. Yes, sir. That estimate is in the rough, because it is impossible to give anything like a detailed estimate. You have to look at everything before that could be done. This is Mr. Roberts's estimate of the whole river from Pittsburgh to Cairo, with sixty-six locks of 6-foot rise.

It is very desirable in the Ohio to have as little rise as possible, so that the dams can be submerged in high floods, and then they will not often even have to go through the chutes. In very high floods they would be altogether wiped out. You would see nothing. They could go straight on. Therefore the lift is put at only 6 feet. Fifty-one locks from Pittsburgh to Louisville, and fifteen from Louisville to Cairo. From Point Pleasant to Louisville there would be twenty, and fifteen down from Louisville to Cairo makes thirty-five. From Pittsburgh to Cairo Mr. Roberts puts it at about \$22,000,000. I think it would be safe to put it at \$25,000,000, because in the lower river there is to be great difficulty. There is a vast amount of moving sand, and it is not known whether that system would work there at all.

The experience on the Ganges in Asia shows invariably the river in one or two seasons fills up even with the top of the dams, and as their dams are used for irrigating purposes they have under end-sluices with openings in the bottom, and they make a whirlpool and draw out the sand at each end, and also have one set in the middle. But they all lay it down as a principle that their experience shows positively that the dams are bound to fill up even with the top with sand.

Of course the same condition would produce the same results on the Ohio below at Louisville. The river is altogether different in its character there from what it is above, but I believe, by this plan of a chute and by closing navigation possibly for a week or two in dead low water, and by opening these freshet-chutes, commencing at the lowest lock and draining the lowest pool, and then draining the second pool through the first and the third through the second, and so on in succession, that you could clear a navigable channel under all circumstances.

Still, there is a contingency. That is a question which could only be solved by actual trial. We can do a great deal on the lower Ohio by controlling the channel in guiding the water and putting it in a narrower space. That is what we are now working at. We have not been able to do much on account of the demand for work in the upper river and at other points. I think we can possibly secure four feet at low water without any dams across the stream, by merely dikes and controlling the current; but the great difficulty of that is it is quite possible that the bars will move and form ahead of us, and we would have to then extend the dikes. That may stop us, or it may ultimately compel their extension from one shoal to the next in the course of many years. Still, that is a very cheap method of improving, and a very efficient one, if it is properly kept up. The difficulty has been that much of the work was done many years ago, and altogether abandoned. The dams are very much injured. They are still to be found, though they have sunk in the sand, and the inhabitants have absolutely taken the stone off in many cases to build the foundations of their houses. There is nobody to watch them and nobody to stop them. But a work abandoned in that way would of course soon go to ruin, when a very little repair would have kept it up.

Q. Have you given an estimate of the cost of the improvement in the Ohio, from the mouth of the Kanawha?

A. From there to Cairo it would be about \$15,000,000, I should say. The figures are \$12,000,000, but I think it would not be safe to put it at less than \$15,000,000. Of course these estimates are in the rough. Detailed estimates would require sites selected, measurements made, and foundations determined, all of which, of course, is now premature. Even then it ought to commence at Pittsburgh, because, even if this chute did not work, if three locks were put in it would help navigation at that point of the river a great deal. In the first twenty miles the average slope of the Ohio is 17 inches to the mile. That is unmanageable. The river is already controlled to the utmost extent that we can do so under the present system. I might make some change, but it would be very costly and not of much benefit. In low water there are only 12 inches at this place I was speaking of, about twelve miles below Pittsburgh. It was improved by Major Sanders in 1838.

Q. What is the depth at dead low water from the mouth of the Kanawha down?

A. It varies on the different bars and from year to year. When I went up to meet the commissioners at Charleston, I went on a boat drawing 30 inches, and was stuck ten miles above the city here for four

hours, and only got away by sparring. It is similar to pulling a small boat over by a pole. They have these same poles on steamboats. Of course they are much larger. You have seen them hanging in front of the steamers. They are worked by steam. The principle is essentially the same as taking a small boat and poling it over a shallow place.

By Mr. DAVIS:

Q. Did you say 30 inches?

A. Yes, sir; and the reports gave down the lower river only two feet at some points. Of course there is plenty of water in the pools, but on these bars there is sometimes very little, and you cannot tell which bars are going to be the worst ones. As the river falls the bars do not get any worse; they cut out; sometimes they get much better. I think the bars on the upper river are almost all sand. This bar up here, which bothered us so much, is almost entirely sand.

Q. Do these bars change much?

A. Not in general position, but in detail. I have had two surveys made, and carefully done, and the deep water of one year was a dry bar the next year. Still, I think that is perfectly manageable. I should have taken that bar up this year, but so much money had to go into an iron snag-boat to clear out the obstruction, which was what the river-men demanded most, that I was not able to expend any money in it.

Mr. Ellett's report was published by the Smithsonian Institute. The following reports are in the official documents of the Engineer Department: Executive Document No. 66, Twenty-second Congress, second session, House of Representatives; Twenty-seventh Congress, third session, No. 50, House of Representatives, War Department; Report on Reservoirs on Ellett's plan, Thirty-second Congress, first session; Report No. 94, House of Representatives, Thirty-fourth Congress, third session; House of Representatives, No. 234, Forty-first Congress, third session; House of Representatives, Executive Document No. 72.

By Mr. DAVIS:

Q. Have you an official record of the time of low water and ice on the river?

A. They do not keep any record of ice. I have a record kept here since 1858 of the stage of water every year.

Q. Upon your plan how much water does it give in the river?

A. It will give you as much as you please. You can decide yourself, in advance, how much water you require, and the dams can be built accordingly.

Q. But what are your estimates, I mean?

A. Six feet all the way through. But if all the dams are made one foot higher, costing but little more, it would be seven feet, and one foot higher would be eight, and yet they would have no more pressure upon the dams, because each one backs up to the next, and although the lift might only be six feet, yet by raising all the pools it is like making stairs, going a little higher.

Q. I understand your plan gives from Pittsburgh to Cairo six feet of water all the time?

A. Six feet in the shoalest places, which would be just below each dam. That is what we calculate to give, and the radical improvement of the river demands it. You cannot have less.

By Mr. SHERMAN:

Q. If you know anything as to the improvement or work on the Fort Saint Philip Canal, be good enough to state it.

A. The Fort Saint Philip Canal is a canal designed to connect the Mississippi River with the deep water of the Gulf, with the intention of avoiding entirely the trouble at the natural mouths of the Mississippi River. Deep water, on the western side of the Mississippi, does not come anywhere near the river, but on the eastern side the deep water of the Gulf, at a point about fifty miles above the mouth of the river, is only seven miles distant, and in its vicinity there are a number of islands that would afford a shelter to vessels in storms.

The plan for making a canal to this deep water is not a new one, as it was suggested and estimated on years ago. I cannot give the exact date, but the estimates at that time were considered so large that the project was abandoned, and an effort was made to improve the mouth of the river on somewhat the same plan that has been in operation for some time past.

But as commerce is constantly demanding greater depth of water in the commercial ports, it has now got to such a state that it is impossible to secure at the mouth of the Mississippi the water necessary to enable the largest ships, which can, of course, transport commerce the most economically, to come up to New Orleans. I have been informed by Major Howell, who is in charge of the work, that with the best of machinery and the best of care, it is impossible to get more than 20 or 21 feet over the bar, and there is no certainty that you can always have that, because accidents will happen either to the dredging-boat or boats attempting to come through this narrow pass, because it really is a narrow canal out in the open sea. It has a width of about 200 feet, and is a long way from the land. Moreover, this method of improvement requires continual appropriations, and if Congress should at any time, for any reason, neglect to make an appropriation, the bar will at once resume its normal condition of giving about 14 feet of water, and meanwhile the commerce which was created on the 19 or 20 feet would be practically destroyed.

In fact, this uncertainty of being able to enter the harbor of New Orleans is a very serious drawback to western commerce, as the ships which can transport that commerce to the greatest advantage, which, of course, are the largest ships, are afraid to go where they may be unable to enter. The Fort Saint Philip Canal, so called because it leaves the Mississippi River not far below Fort Saint Philip, is designed to obviate this matter entirely. The greatest difference of level between the waters of the river and the Gulf, at a point where the canal starts from the river, is only 5 feet, and consequently the maximum lockage would be only 5 feet, which is, of course, comparatively insignificant.

In accordance with orders from the Chief of Engineers, Major Howell, the officer in charge, made a very thorough survey of the whole plan, and bored in various places along the proposed route of the canal to ascertain the character of the soil. He came to the conclusion that it was perfectly feasible to make the lock required, giving a depth of 27 feet on its miter-sill, and that the soil was so firm that there would be no difficulty in giving the canal such a width and such slopes to its bank that this depth of 27 feet could be maintained in the canal from the lock to the open sea.

Of course an artificial harbor would have to be constructed at the Gulf end of this canal, somewhat similar, probably, to the outer harbor of the Suez Canal, but that probably would present no difficulty.

The whole scheme has every appearance of feasibility, and if it succeeds it will be an immense stimulus to the commerce of the Mississippi, as boats can easily reach it. They will save fifty miles of towing up the

Mississippi River; they will save heavy pilot-charges, and they will have a harbor into which they can sail without any danger, in almost any storm, and will go there with a perfect certainty that if they load anything less than 27 feet there will be no difficulty whatever in going right to the wharf at New Orleans. Of course, after they pass from the canal into the river, sailing-vessels must be towed, as vessels cannot sail up the Mississippi. There is no lack of water in the river, its average depth from New Orleans being 100 feet and over at low water.

I have been informed that Major Howell's estimate of the cost of the canal is \$7,000,000. A board of engineers has been thoroughly examining the plans, and their report will probably be sent in at the next session of Congress, when all the details will be given.

Examination of BENJAMIN EGGLESTON.

By the CHAIRMAN:

Question. Are you acquainted with the workings of the Ohio canals?

Answer. Yes, sir.

Q. Please state the length of time you have been acquainted with it, and your means of knowledge.

A. I have been directly or indirectly acquainted with the canals of this State for thirty years.

Q. State whether they are increasing or decreasing in business.

A. They are decreasing in business.

Q. State your reasons for that belief.

A. There are two canals in Ohio, one from Portsmouth to Cleveland, three hundred and nine miles long, and one from Cincinnati to Toledo, three hundred and forty-seven miles long.

Q. State the names of each.

A. The Portsmouth Canal is called the "Ohio Canal," and this one from here to Toledo the "Ohio and Erie Canal." There is also, however, the "Hocking Canal," running from Columbus down the Hocking Valley to Athens. They are all owned by the State, but have been leased out to lessees, and operated by the lessees under a restriction of tolls.

By Mr. CONKLING:

Q. All of them?

A. Yes, sir; that was put in to prevent the railroads from gobbling them up and subsidizing them.

By the CHAIRMAN:

Q. State the size of these canals, and the tonnage of their boats, if you know.

A. On the surface of the water they are 40 to 42 feet, and were intended to be 4 feet in depth, but they are not quite that. They were built with that intention. The boats are built so as to go through the locks, which are 80 feet long by 14 feet wide.

By Mr. CONKLING:

Q. What is the width of the bottom—the prism of the canal?

A. The bottom was started out to be 30 feet, but it is filled up, and has not been kept up to that.

By the CHAIRMAN:

Q. Are they the same size as the original Erie Canal before the enlargement?

A. I do not recollect. I think they were built the same size as the Erie Canal.

Q. What is the tonnage of the boats?

A. The boats carry 65 tons and draw 3 feet of water.

Q. Can you give any reason that you know of for the diminution?

A. The Ohio Canal, from Cleveland to Portsmouth, three hundred and nine miles, for many years brought pretty much all the goods that came from New York to Cincinnati, and all the West, through the Erie Canal from Buffalo to Cleveland, in that way. The building of the different railroads kept cutting it off, but finally they got this canal built from here to Toledo. Then the price of transportation on the lake from Buffalo up to Toledo was no more than it was to Cleveland. This canal was shorter than the other, and this canal became a competitor for the through business both ways, against the Ohio Canal, down to Portsmouth. It did a very large business until the railroad was built from here to Toledo. In the summer season the railroad would put down its rates from here to Toledo very low; they would carry wheat as cheap as by canal; but the moment that it came cold weather, and the fall came in, they would put up their rates. The canal would freeze up, up North, and the rates would go up. The result was that owners of boats would not replenish them. They let them gradually die out. It would not pay them, as they had the railroad to compete with in the summer, and the boats began to decay, and there were no parties here who would fight the railroads from here to New York any more. They would make through rates from here to New York 45 to 50 cents a hundred, and by the lake route, although we could carry to Toledo very cheaply, and from there East, yet the difference in the time of getting the property to New York, and these low through rates, gradually drove the business from the canal. The boats began to decay, and they are building hardly any. I think business last year was just about the same as it was the year before, but there is no through business on either of the canals at all. I do not suppose that there is a ton of freight that starts from Cincinnati and goes to the sea-board by either of the canals during the whole season, but yet there is quite a large local business done.

Q. Do you know what they charge a mile per ton on the canals?

A. You can carry property from here to Toledo by canal at 15 cents a hundred, or \$3 a ton. The other canal would charge a trifle more than that, because it is a little longer. They have to pay these lessees a small amount of tolls to keep up the canals. They have no right to increase the present rates of toll. The railroads would have had these canals long ago if it had not been for that, but under the act of the legislature they cannot increase the tolls on the canal, but can reduce them as much as they please. They cannot increase them over a certain rate which was fixed back when they were leased, some seven or eight years ago.

Q. What is the usual rail-freight from here to Toledo?

A. In the winter season their charge is about 25 cents a hundred, or about \$5 a ton. In the summer season, when we were taking wheat at 8 cents a bushel, they wanted to get 9. But rather than miss it they would take it at 8 cents as the canal did.

The only advantage the canal had over them then was that the canal receipted for quantity, and the railroad company would never do that, and they would steal at the elevators at the other end of the line a little off every car-load, or the car-load would be a little short.

That was the only argument we could use, on the canal, that we would deliver the same quantity of wheat they delivered to us, and if

we did not we would pay for it. The railroad would just deliver the car-load, and would claim, perhaps, that it shook out between the cracks may be three or four bushels to each car. That is a toll that they are getting at almost every place where they have an elevator. They got it in New York; they got it everywhere. You send a car-load of wheat from here to New York. They deliver a car-load to you, and it is always a little short. We cannot account for it. They are all sealed or lined, and are all good cars, but the quantity will always be a little short. There is something wrong about it. That is the worst feature of theirs of sending grain by rail.

By the CHAIRMAN:

Q. How do you account for the extraordinarily low prices given to-day for the transportation of coal from Washington, Ind., here, and of iron from Saint Louis here by rail?

A. It is because there is a river. They have to compete with a river. From Washington they do not. I do not look upon 6 cents from Washington as being a very low price.

By Mr. CONKLING:

Q. It is six mills and $\frac{73}{100}$ of a mill per ton per mile.

A. I never made the calculation. I know that the charge is 6 cents per bushel. I would not like to see our canals going out of existence.

Q. Even in the present dilapidated and imperfect condition, you think the canals are still a regulator of the railroads?

A. O, yes; we get low freight in the summer, although we do not do much on the canal. But they are afraid of the canal all the time, and it keeps the prices down.

Examination of JAMES J. HOOKER.

By Mr. DAVIS:

Question. What is the effect upon the trade of Cincinnati by the improvement of the Erie Canal and that of the mouth of the Mississippi, with no additional facilities by water?

Answer. In that you include the proposed Chesapeake and Ohio Canal, do you?

Q. I do not include any but the two. If there was an outlet from Chicago, by way of the Erie Canal, which there is, and if the mouth of the Mississippi was improved and no additional water-route was given by way of the Ohio River, what effect would it have upon your trade?

A. I cannot think it would have any serious effect upon our trade here, at least not to cut it off. We are benefited by the improvement of the country around us, though in a mercantile way our trade is confined to less territory every year. At the same time it continues to grow. But the completion of the James River and Kanawha Canal would be of great benefit to us. I am satisfied that the facilities of the lines of railroads running into Cincinnati at the present time would not be equal for carrying the trade. There are a series of railroads which are not connected with any eastern lines running into Indianapolis and Columbus—the Ben Smith roads, they are styled; these, I am satisfied, will throw their freight in this direction. They are not allied to any eastern combinations at all. The result would be that a great deal of territory whose grain now seeks an outlet through Chicago and Toledo, would go through this James River and Kanawha Canal. These Ben Smith roads that I have mentioned run from Columbus through Indianapolis into Northern Iowa, and drain a very large extent of country,

but with the advantage of cheap river transportation by the Ohio River from Cincinnati, and the James River and Kanawha Canal, they would undoubtedly do an immense business, and I think that line, if built, would result in the cheapening of transportation very much. Not only would freight seek that outlet from Cincinnati, but over all the railroads tapping the Ohio River, from Cairo up. Running north and west from Louisville is the New Albany and Chicago Road, also the New Albany and Saint Louis Road, and the Jeffersonville and Indianapolis Road, all of which would bring freight to the Ohio River, to be transported through this canal to the sea-board.

Q. In your opinion, if the central water-line was built, which is the James River and Kanawha Canal, would it have a tendency to increase your grain and other trade here to any extent?

A. Unquestionably it would. Of course it would be impossible to give figures, but I do not know why, if it should be built, Cincinnati should not handle at least ten times as much grain as she now handles, because her grain-trade is now purely local, coming for consumption in this city and the surrounding country. Then it would become a general trade like that of Chicago and Toledo.

Q. Would that water-line be likely to reduce the rail-freight between here and the eastern markets?

A. Most certainly it would. Building the Baltimore and Ohio Railroad has had that effect. It keeps below all other roads all the time. Their rate to tide-water is lower than that of any other road. This Chesapeake and Ohio Road is also doing quite a large business, considering its facilities, to the East. I know provisions are often shipped as far south as Georgia over the Chesapeake and Ohio Railroad.

The committee here adjourned.

LOUISVILLE, Ky.,

Tuesday, October 27, 1873—7 p. m.

The committee met pursuant to adjournment.

Examination of Hon. JAMES SPEED.

By Mr. SHERMAN:

Question. Will you state, if you please, the present legal status of the Louisville and Portland Canal Company?

Answer. I expect I can give you the information you desire better by presenting to the committee this report, which was made by the canal company. There are two papers in it: one from Mr. Guthrie, the then president, addressed to William D. Gallagher, and one drawn by me, addressed to Joshua F. Speed, president of the canal company.

Q. Is that a recent paper?

A. It is dated 18th December, 1871. This paper gives a complete history of the canal. The first charter was by the State of Kentucky on the 12th January, 1825; the canal had to be completed within three years. They commenced operations under that, and it was constantly extended from that time until it got into operation in 1831, I think.

Afterwards the receipts from the canal became enormous, and it was found to be a tax upon commerce so heavy that the stockholders themselves thought it wrong, and they applied to the legislature of Kentucky, and the legislature of Kentucky passed the act, which is the act of 1842, for the purpose of eventually making the canal free of tolls.

"The directors are authorized, when the stockholders shall so direct, to sell the stock belonging to individuals to the United States, or to the State of Kentucky, or to the city of Louisville."

By Mr. CONKLING:

Q. What is the date of that?

A. That is in 1842. The directors under that, as you will see by the previous history, offered it to the United States. The United States then refused to take it. They offered it to the State of Kentucky, and the State of Kentucky refused to take it. They offered it to the city of Louisville, and the city of Louisville refused to take it. There was appended to that offer this proviso: "Or further to effect the object of making the canal free, the board of directors, when authorized by the stockholders, shall have the privilege of appropriating the net income arising from the canal to the purchase of stock, instead of making dividends therewith; and it is provided that the shares so purchased shall be held in trust by the board for the purposes herein declared, and voted on by them, until, by the operation of the provisions of this act, all the shares standing in the names of other than the Government of the United States shall have been purchased up. When the shares shall be all purchased, the same shall be transferred to the Government of the United States on condition of said Government levying tolls for the use of the canal only sufficient to keep the same in repair, and pay all necessary superintendence, custody, and expenses, and make all necessary improvements, so as fully to answer the purposes of its establishment."

Under that provision, when the Government of the United States refused to take the canal, and the State of Kentucky would not take it, and the city of Louisville would not take it, the directors went on and purchased up all the stock except five shares, each one holding one share, which they held as the directors of the canal.

Q. Purchased it up for whom?

A. For the Government of the United States, under this act. After that was done, and all purchased, the stock was again offered to the United States, but it was perfectly evident that the canal required enlargement, and that the funds on hand then held by the directors were not sufficient.

The Government of the United States, instead of taking the canal, passed the resolution of Congress, approved 20th May, 1860.

However, prior to that, the State of Kentucky, in 1857, passed an act to amend the charter of the Louisville and Portland Canal Company, authorizing the company to construct, with the revenue and on the credit of the corporation, a branch canal sufficient to pass the largest class of steam-vessels navigating the Ohio River, and the same powers are given to construct the branch as were conferred to make the canal.

Now the thing thus stood in 1857, with these five directors having the canal and holding it in trust for the Government of the United States under a Kentucky charter. The business of the country absolutely demanded that the canal should be enlarged. They got this act passed through the Kentucky legislature, and then came the doubt whether, as the revenues belonged to the Government of the United States, it was competent for the legislature to appropriate those revenues in that way.

Congress then, in 1860, after years of application, passed a resolution authorizing the revenues and credit of the company to be used for enlarging the said canal, and to construct a branch canal. So, under the

act of 1857 and under the resolution of Congress of 1860, the directors proceeded to enlarge the canal. They used up the funds which they had on hand, and under the authority of the Kentucky legislature and under the resolution of Congress they made a mortgage of the revenues of the canal and proceeded to the execution of the work.

As you will see from the paper of Mr. Guthrie, the Government of the United States had previously been a stockholder. The Government of the United States never paid anything for its stock. It never paid a dollar. It was all paid back by dividends from the canal.

By Mr. NORWOOD :

Q. How did the Government become a stockholder ?

A. By subscription under acts of Congress.

By Mr. CONKLING :

Q. When ?

A. The first subscription was by an act of Congress approved 13th May, 1826. The Secretary of the Treasury was authorized to subscribe one thousand shares of the capital stock of the Louisville and Portland Canal Company. That subscription was made and the Government became then a stockholder.

By Mr. SHERMAN :

Q. Did not the Government pay that ?

A. No, sir. The Government paid the money, but the money was all paid back to the Government.

Q. Re-imbursed ?

A. Yes, sir. I mean by that that the whole money was paid back. The United States by the act of Congress approved March 2, 1829, authorized a further subscription of stock, not to exceed thirteen hundred and fifty shares. That subscription was also made and paid for, and that was paid back out of the revenues.

Q. To the Government ?

A. Yes, sir ; the Government stood then, in 1860, as the owner of the shares thus subscribed for.

Q. All of which had been paid for by the revenues of the canal ?

A. All of which had been paid for by the revenues of the canal. I do not recollect, without looking back, how much money, after redeeming all stock, the directors had. They had a very considerable sum of money on hand, and there was an absolute necessity and the demands of commerce required that the canal should be enlarged. The Government refused to take the canal and make the enlargement. They were unwilling to undertake it upon the revenues of the canal as they then stood.

By Mr. CONKLING :

Q. Does your statement begin at the inception of the Government's connection with this canal ?

A. No, sir ; it begins back of that. The original charter by the State of Kentucky was the 12th January, 1825, and the Government became a stockholder on the 26th May, 1826.

Q. That is the first act of the Government ?

A. Yes, sir ; it became a stockholder in the corporation. We have now come down to 1857, when the Government owned all the canal except the five shares. That is, it owned the shares which it had subscribed for, and the revenues of the canal had bought out all other stockholders, so that the five stockholders stood as trustees for the Government, having in their hands not only the canal, but having in

their hands, as the archives of the canal company will show, a very large sum of money. I think it was two hundred and odd thousand dollars.

Q. Did the charter by the State of Kentucky require the trustees to be shareholders ?

A. Yes, sir.

Q. And it was for that reason that the five shares remained in their hands.

A. Yes, sir ; and as you will see by the archives of the company, and particularly from the report of Mr. Gallagher, they remained at the request of the then Secretary of the Treasury. He requested that they should remain and continue in the charge of the canal.

By Mr. SHERMAN :

Q. Mr. Guthrie being Secretary of the Treasury ?

A. I think it was before Mr. Guthrie. I think it was Mr. Cobb who first made the request. That was made before 1857. I recollect that Mr. Guthrie, while he was Secretary of the Treasury, was cautious to touch it very lightly and do as little as he possibly could about it, because of his past and then connection with the canal. As I have said, two or three times, we have now got down to 1857, these directors thus holding, and the Government of the United States having refused to take charge of the canal and to make the enlargement. They got this act of the Kentucky legislature authorizing them to make the enlargement, but they doubted their authority under that act without authority from the Government of the United States. Then they got the resolution of 1860, made the mortgage, and proceeded to enlarge the canal, and issued the bonds. The records will show exactly how many bonds were issued. The Government afterward made divers appropriations to the canal. The company always permitted the Government officers to come here and expend the money, until a little over a year ago, when Congress passed an act appropriating \$300,000, or about that sum—I am not accurate as to the figures—toward completing the Louisville Canal, and providing in the same act that the tolls thereafter should not exceed five cents on the dollar. The Government officer, General Weitzel, came here and proposed to expend that \$300,000 on the canal. The company applied to me to know in what position they would stand if they accepted that \$300,000. I gave it as my opinion that they could not cut the act in two, and that they had to take it as a whole ; that if they accepted the \$300,000, they would be bound to cut down the tolls to 5 cents on the ton, and 5 cents on the ton would not pay for opening and shutting the gates ; it would not pay the expenses of keeping the canal. That would be virtually, as I thought, repudiating the debt—the mortgage. I do not think they had the right to do it.

General Weitzel proceeded and the canal company stopped him. The Government of the United States then filed its bill against the canal company and we went before Judge Miller at Long Branch. He delivered an opinion in the case, which I also have here, and from which I will read an extract. Judge Miller differed with me in this opinion only in one thing. I regarded the trustees as being trustees coupled with an interest, and that their discretion could not be controlled. Judge Miller regarded them as merely naked trustees, having no interest at all.

By Mr. CONKLING :

Q. A naked power ?

A. A naked power without interest, and he regarded that they were subject to the control of the court.

The opinion was that they could accept the \$300,000 and still charge tolls. That was the result of his opinion and his expression is "as regards the first of these, I have no hesitation in expressing my entire conviction that the bondholders have a lien upon the revenues of the canal and a right to insist that the corporation shall protect those revenues to the extent necessary to make entirely safe the payment of their debt and its accruing interest; that until that debt is paid, or the mortgage satisfied, or otherwise discharged, with the consent of these bondholders, this right of theirs remains with a corresponding duty of the directors of the corporation.

He, however, granted the injunction sought for, and placed the whole further improvement of the canal under the control of the court. Suit is still pending just in that shape.

Mr. SHERMAN. Now go, if you please, to the action of Congress at the next session.

Mr. CONKLING. Before that, if you please, what suit do you refer to?

A. As I explained just now when General Weitzel came here and demanded to expend the \$300,000 which had been appropriated by Congress, in the act which appropriates that money, Congress said that after that act was passed tolls should not be received except at 5 cents per ton. I advised the directors to refuse the \$300,000, being apprehensive that if they accepted that part they would accept the remainder, and that the tolls afterward would be 5 cents on the ton.

Q. But the suit, if you please—who commenced the suit?

A. The Government of the United States commenced the suit against the directors of the canal company.

That you may understand exactly how the suit commenced, General Weitzel sent his contractors down there and they began obstructing a part of the canal. Under my advice—for I did not exactly know how to sue the Government of the United States—the directors of the canal sent their dredging boat there and as fast as they threw their earth into the canal the dredging boat would throw it out, so that the Government was compelled to sue the directors to obtain the privilege of expending this \$300,000.

Q. What was the form of the suit, and what was the judgment demanded?

A. The first point they made was that the Government of the United States owned the entire canal, and that these directors had no power and no control over it; that the whole thing belonged to the Government. They made that claim first, and that was the claim that they set up.

Q. At common law or in equity?

A. In equity. There was a prayer for an injunction.

Q. A perpetual injunction?

A. Yes, sir.

Q. And a motion for an interlocutory injunction?

A. Yes, sir. Judge Miller's opinion was perfectly satisfactory, I believe, to the agents of the Government, and I know that it was to the directors. They were glad to be relieved of the responsibility, and glad that the courts should say that they had a right to protect the bondholders, and at the same time get the benefit of the \$300,000. They did not want to take the responsibility of taking the \$300,000, and running the risk of getting tolls down to 5 cents. I suppose there never will be another movement in the suit at all.

Q. This decision of Judge Miller's was on the motion for a preliminary injunction?

A. Yes, sir.

Q. And did the case ever come to a final hearing?

A. No, sir.

Q. But rested upon that?

A. Yes, sir; it just rested upon that. It stands upon that, and both sides were satisfied with the thing as it stood.

By Mr. SHERMAN:

Q. Do I understand you to say the Government of the United States were satisfied to allow these trustees to continue to levy 50 cents until the last dollar was paid?

A. I say they were satisfied with the result of this suit. I don't know what the Government was satisfied with.

By Mr. DAVIS:

Q. What are the tolls now?

A. That I cannot answer you. I am only the attorney for the canal. Other gentlemen can reply to that question.

By Mr. SHERMAN:

Q. I wish you to go on a little with the history of this matter. So far I was familiar with it. Have you the act of Congress at the last session making an appropriation for the final completion of this work?

A. I have not it here, sir.

Q. Have you read it?

A. Yes, sir.

Q. Do you remember the provisions of the law?

A. If there was any appropriation last winter, I do not think my attention was called to it.

Q. We intended in that action of last winter to assume these bonds and to assume the whole control of the canal, and I was very much surprised that the officers of the Government had not the canal in their possession at this moment.

A. Judge Miller decided there, and I think correctly, that the Government has not, upon a mere assumption, the right to take charge of the canal.

Q. The assumption of the bonds?

A. Yes, sir. They must discharge the bonds.

Q. How can the Government discharge them when they are not due?

A. That is for the Government to determine. They could purchase them in. I think these bondholders have a right under the charter and under their contract until the mortgage is satisfied.

Q. A right to what—to stop the navigation of the Ohio?

A. No, sir; but that the canal shall be managed by the machinery—and Judge Miller affirms that—and after the manner provided in the act of the Kentucky legislature and the resolution of Congress.

Q. Is it claimed that the Government of the United States, having appropriated more than a million of dollars since in completing a new canal, has no power over it?

A. The Government of the United States has power over the canal, but no power to interfere with the right of the mortgagees.

Q. But suppose it assumes the mortgage?

A. That is not paying a debt. The mortgagees have the right to have that canal controlled and managed by the machinery and by the corporation, and I regard that as decided by Judge Miller, and I think it is sound law.

Q. Do I understand that Judge Miller has decided that the Govern-

ment of the United States, having now completed the canal, and rebuilt and enlarged it, are compelled to keep this machinery and power in force until the last bond is paid?

A. Until the Government satisfies the mortgage.

Q. How can the Government satisfy the mortgage until the last note becomes due and is paid?

A. Of course it cannot.

Q. Is it claimed by this company that they have the power to continue this agency or machinery and levy a tax upon the commerce of the Ohio River at 50 cents per ton until the last bond becomes due and is paid?

A. Unless it is otherwise paid?

Q. How can it be paid?

A. By agreement between the Government and the bondholders; only by the voluntary assent of the bondholder. The Government may violate a contract, but it has no right to do so. I think Judge Miller has affirmed that position.

Q. I would like to have that portion read..

A. "As regards the first of these I have no hesitation in expressing my entire conviction that the bondholders have a lien upon the revenues of the canal, and a right to insist that the corporation shall protect these revenues to the extent necessary to make entirely safe the payment of their debt, and its accruing interest, and that until that is paid or the mortgage satisfied or otherwise discharged, with the consent of these bondholders, this right of theirs remains with a corresponding duty of the directors of the corporation.

Mr. CONKLING. That is full and to the point.

Mr. NORWOOD. It is perfectly good law.

Mr. SPEED. And it rests upon the most undoubted authority, and not only upon the most undoubted authority but upon the plainest principles of common honesty.

By Mr. SHERMAN:

Q. Who fixes the tax of 50 cents per ton? What law fixes that charge?

A. It is fixed under the charter, and it is a sliding scale. As I understand, these directors as rapidly as they can meet these bonds will reduce the scale.

Q. But suppose the Government of the United States now assumes positively the payment?

A. Well, that is a matter between the Government and the bondholders, and the directors have nothing to do with it.

Q. You say that under that decision the assumption by the Government of the United States is not a legal satisfaction of the mortgage?

A. No, sir.

Q. Suppose one bondholder should refuse to take pay for the bonds?

A. Then I would say that as long as a single bond remained unsatisfied, that creditor, under his contract, had a right to all the rights conferred on him by that contract, a right to continue the machinery of that corporation up to a full satisfaction of his contract.

Mr. SHERMAN. There has been a universal complaint that after the Government had built this canal, and appropriated the money to pay the bondholders, and assumed the obligation of this debt, that there should be longer any controversy about the ownership of the canal.

The WITNESS. That is a matter between the Government and the bondholders. Probably you are mistaken in regard to the Government having paid so much toward this canal.

A VOICE. The bondholders paid \$1,600,000.

Mr. SHERMAN. No one denies that they must be paid.

Mr. SPEED. They have done that, and, besides that, commerce has paid all the remainder. It is the people of the United States who have paid it, and I think they and every one of them is bound to stand by the contract as they find it.

Q. Bound to pay that mortgage?

A. Yes, sir; and bound to pay it according to its terms.

Q. Is that now the present attitude and present legal claim of the five trustees, that they are to hold possession of this canal with the right to levy tolls at the rate of 50 cents upon the ton?

A. I can say this for them. They stand there, without interest in the matter, simply as stakeholders between the Government and bondholders. It has been an onerous office to them. They have often had to strain their private credit to obtain the means necessary, but they are determined that their good faith in this matter shall be maintained, and that unless the Government adjust with the bondholders, they will stand upon their rights.

Q. How can the Government adjust with the bondholders?

A. That is a matter with the Government. They have nothing to do with that. Under the authority of the Government they have issued these bonds. Under the authority of the Government they have placed these bonds upon the market, and they have become stakeholders as between the Government and bondholders.

Q. What is the nature of these bonds?

A. Simply coupon-bonds, payable I do not recollect when.

Q. Bearing what interest?

A. (By Mr. Joshua F. Speed.) Six per cent.

Q. When are they due?

A. Four hundred thousand dollars was due the 1st of January, 1872, which has been paid; \$400,000 will be due on the 1st of January, 1876, part of which has been taken up. We have always taken up the bonds as we have money. The remainder will be due each four years thereafter.

By Mr. DAVIS:

Q. Give us the total debt.

A. The first communication as president of the canal company that we have received from the Secretary of the Treasury was received yesterday, and I was just preparing an answer this evening to the queries propounded by him. We have never had any official notice —

Mr. SHERMAN, (interrupting, to Mr. James Speed.) Is there any other matter that you think will throw any light upon this subject?

A. I will mention that you will find a very voluminous and satisfactory report by Mr. Gallagher. I do not know to which House it was made, but it was made some years ago, and, I think, reported to the Senate. That document gives you a perfect history of the whole canal.

Q. What year was that report made?

A. I do not recollect, sir. I should make this further remark. This mortgage was made to Isaac Caldwell, of this city, and to Dean Richmond, of New York. Mr. Richmond is dead; Mr. Isaac Caldwell is the surviving trustee. I cannot speak for him, but he can for himself, as to what his rights and duties may be under the deed of trust. He has no interest in the matter, and, I think, the Government and nobody else should ask him to assume any responsibility.

Q. He is trustee for the bondholders?

A. Yes, sir; he is trustee for the bondholders.

You will see from the acts of the Kentucky legislature, as I mentioned, that the canal is only given up to the Government of the United States upon the condition that it shall charge tolls sufficient to pay for the use of the canal and to keep it in repair. It contemplates upon that surrender that tolls to that extent are always to be received by the Government of the United States. In March, 1872 or 1873, and I forget which, I went to the Kentucky legislature, desiring to make the canal absolutely free, with a series of resolutions, which you will find, and dispensing with that provision altogether, hoping to make the canal free. I did not, in terms, dispense with it, but specify conditions upon which the Government might assume the canal. For instance, that the city of Louisville should have bridging powers; that it should have, as you have seen if you have visited the canals, the same rights in regard to sewerage; that there should be some rights in regard to water privileges; and that, instead of surrendering to the Government of the United States police powers of the State, it should remain over the whole; and that finally, when the debts were paid or the mortgage discharged and this little stock that they held paid for, then the surrender was to be made. My object in having that act of the legislature so passed was two-fold: first, to get this bridging and sewerage privilege and the water privilege; and, finally, to get rid of that feature of the act of 1842 which required always that there should be tolls.

By Mr. CONKLING:

Q. What is the date of that opinion of Judge Miller?

A. It was last September or August, a year ago.

Q. August or September, 1872?

A. Yes, sir.

Q. I suggest that if you will just read, or have read, the letter of the president of this company of the 14th December, 1871, propounding to you two questions, and just that termination of your answer to them, that it will give a clearer view of this precise point that appears in your statement.

A. On the 14th December, 1871, Mr. Joshua F. Speed, president of the Louisville and Portland Canal Company, addressed to me, as the attorney of the canal, the following letter:

DEAR SIR: With a view of making the canal free, certain legislation is proposed by parties seeking to attain that end, and they have had a conference with us. We desire to know, first, would we be warranted in surrendering the canal before the contemplated enlargement for which the mortgage was made and trust created is completed? Second, would an appropriation by the Government of the United States of a sum sufficient to complete the work, with assumpsit of the bonds, warrant the directors in releasing the mortgage, or would the bondholders have the right to require us to hold a mortgage on the property until the bonds are paid?

In answer to the first of these questions I replied:

The State government was anxious to have the work done and placed it in the power of the Louisville and Portland Canal Company to do it, and the Federal Government gave its revenue from the canal to the company to accomplish it. Authority comes from each government and a duty arises to each. Kentucky cannot deprive the United States of the right of a stockholder, nor can the United States demand of Kentucky to be more than a stockholder in a corporation created by Kentucky. Has not the United States by the resolution of 1860 devoted the revenue and credit of the company to the enlargement of the canal and the construction of a branch canal, and made the corporation the trus-

tee for its accomplishment? I do not think the Government can revoke this grant until its object is completed, nor can the Government of the United States change the trustee without the consent of Kentucky. The revenues from the canal are not collected under a Federal but State law, as has been shown. Neither the State nor Federal Government can abolish all tolls to the prejudice of a bondholder.

So the Federal Government, being a mere stockholder in a State corporation, cannot, without the consent of the State, dispense with the corporate machinery under and by which the United States Government became a stockholder. Though the Federal Government is the sole beneficiary of the corporation, no tolls can be collected except under the State law and by the machinery of a corporation created by State law. The company owes a duty to the State and a duty to the United States. These obligations are several. As has been said, the State cannot abolish or modify the charter to the company without the consent of the United States, nor can the United States exercise any rights or powers over the canal, except as a stockholder in a State corporation. From all which it follows that the president and directors have, under the State and Federal law, assumed a trust which they must perform until relieved by the proper acts of the two governments. Neither government can, without the consent of the other, relieve the president and directors of the canal company from the duty of enlarging and branching the canal out of the revenues and upon the credit of the company.

Now it was in view of meeting the legislation contemplated by this that, in the succeeding March, 1872, I think it was, I went to the Kentucky legislature with that resolution and got passed through the Kentucky legislature the necessary legislation to accomplish this thing. Then it was for you gentlemen to do the remainder.

Q. Have you a copy of that communication?

A. I have none here. They were incorporated in an act or bill introduced by Mr. Stevenson, from Cincinnati, in the lower house. You will have no trouble in finding that.

By Mr. CONKLING:

Q. And it was after that opinion that this judgment, or order rather, of Judge Miller, upon the motion for an interlocutory judgment, was made from which you have read?

A. Yes, sir; it was after that opinion.

By Mr. SHERMAN:

Q. You have not examined to see how far the question is affected by the law of last winter, which appropriates enough money to complete the canal and assumes the payment of the debt?

A. I have had no occasion to examine it at all. I have just set down firmly in my mind, as I think, upon principle and authority, that the Government cannot, without violating its own solemn contract, take that canal without paying the debt.

Q. But how can it pay the debt?

A. After you have made a debt twenty years hence, or it has been made by your authority for you, and you want to pay it, you cannot complain because you cannot pay it.

Q. Is there any doubt about the power of the Government of the United States to assess the value of the property of these stockholders and pay them their full compensation?

A. If you are taking it for public use, I suppose you could possibly do that. I will not answer that question right off.

By Mr. NORWOOD:

Q. You say here, "from all which it follows that the president and directors have, under the State and Federal law, assumed a trust which they must perform until relieved by the proper acts of the two Governments;" I wish to inquire of you, if you please, if you mean there to convey the idea that by the joint action of the State of Kentucky and the Federal Government they could pay all those bonds, for instance, and relieve the trustees and satisfy the bondholders.

A. With the consent of the bondholders; without the consent of the bondholders, I do not think you can.

Mr. NORWOOD. That is not implied in your remark here, and it is the reason I put that interrogatory to you.

A. If you will read the whole opinion you will find that that is in there.

Examination of Mr. JOSHUA F. SPEED.

By Mr. SHERMAN:

Question. Will you please state such facts as will give this committee full information as to the present condition of the Portland Canal?

Answer. I brought with me a reply to a letter of the Secretary of the Treasury, which I have started to answer.

By Mr. CONKLING:

Q. You are the president of the company?

A. Yes, sir. I have never, until yesterday, received a communication directly from the Secretary of the Treasury with reference to the legislation of which Mr. Sherman has been asking my brother. I suppose I have been inquired of by the United States attorney here before upon these matters. The Government has regularly, I may say, sent out here and examined all of our accounts, under almost every Secretary of the Treasury who has been in since I was a young man. I have not been president of the canal very long—only after the death of Mr. Guthrie. Previous to that time I was a director. As I say, I have received no communication officially from the Secretary of the Treasury until yesterday.

I regret that I did not think of bringing his letter; so that you will understand the answers which I have made to his inquiries, but you will catch the questions by the replies which I give.

I say: "Your communication of the 22d instant, submitting certain inquiries in regard to this company, is received. I answer—1st. There are now outstanding 1,172 bonds of \$1,000 each, with coupons attached. The bonds bear 6 per cent. per year interest, payable half-yearly, on the 1st day of January and the 1st day of July. All the interest has been paid as it became due upon presentation of the coupons."

The bonds matured as follows: "373 on the 1st January, 1876; 399 in 1881; and 400 on the 1st January, 1886."

He then asks, "Who holds the bonds?" and "the price?" I say, "I have no means of knowing the price at which the bonds might be purchased except from the published price-current, a copy of which is hereto attached."

He then asks "where the bonds are held?" I reply, "It is impossible for me to give a complete list of the owners or holders of these bonds. Any list from me would be so limited as to be valueless. I have an impression that most of them are owned by Kentuckians."

Thirdly, he asks, "What is the indebtedness of the company other than bonds?" I reply, "The indebtedness of the company is as follows:"

(The witness here stated that he was unable to furnish the figures, which were not before him at the present time.)

Our treasurer told me that there was "a note of \$5,000; balance on construction of toll-houses and offices at locks, \$3,361.60; safe for office, \$350; balance due hands, \$700; probable expense for October, \$6,136.20; balance due on gates, \$8,000; coupons due 1st January, 1874, \$35,160; salaries and office-expenses, \$1,975. The preceding includes all the obligations referred to.

He then asks about this stock. I say, "There are five shares of the stock of the company owned by individuals, each share being for \$100, on which there is interest due since ——. We have never paid but 6 per cent. interest, and is so small that I do not believe I have collected mine for the last five years."

The amount of money in the treasury at this time is \$26,813.49.

Q. What is the price of these bonds, as appears by the annexed price-list?

A. They vary according to their issue.

Q. According to the time of their maturity?

A. Yes, sir. They are canal bonds, second issue. There are no first issue; they are all taken up.

Q. The first to mature are worth how much?

A. Ninety-two to ninety-four.

Q. The next?

A. Ninety-one to ninety-two.

Q. The next?

A. Ninety to ninety-one.

Q. So that the shortest-lived bonds are the most valuable?

A. The shortest-lived ones are the most valuable in our market.

By Mr. DAVIS:

Q. Are they 6 per cent. bonds?

A. Yes, sir; 6 per cent. bonds.

By Mr. CONKLING:

Q. Is the interest payable in currency or coin?

A. Currency.

By Mr. SHERMAN:

Q. You have estimated the amount of coupons due January 1, 1874; what will be the probable amount of receipts?

A. I think it will be enough to pay that floating debt with the money on hand, just about, and the coupons, if we have a good run now, as we call it.

Q. What is the amount of money on hand?

A. Twenty-six thousand and some odd dollars.

Q. As president of the company, do you claim to exercise any authority other than to protect the bondholders?

A. No, sir.

Q. If the bonded debt were extinguished, then what?

A. I would be glad to surrender, if it was extinguished to-morrow.

Q. Is there any practical difficulty in the way of buying up these bonds at the market-rates, in your judgment?

A. I think you could not buy them at the-market rates.

Q. At what rate could they be bought?

A. Not less than par.

Q. Do you think they could be bought at par?

A. I am pretty certain of it. In a communication that I had from

somebody before the board from Cincinnati, they thought, which I saw was running in your mind here, that one man might defeat the object of the Government or ten. We said, as a board, that if that was done we would not protect any such people by trying to hold a great property as this for so paltry a sum. In justice to myself I must say that the parties paid as much as these bonds were quoted at, as we needed the work. They are held now, I have since learned, very largely by our charitable institutions and persons who want a perfectly good, solvent security.

Q. Would not these persons, these bondholders, so far as you know, consent to the substitution of a direct assumption by the Government of the United States of these bonds.

A. I have made diligent inquiry on that subject and have not found one who would. I was going to say the responsibility was this: They loaned this company \$1,600,000 upon a mortgage, which is of record. The company has exhibited its ability to pay the \$1,600,000 by paying the \$400,000, which was due at maturity. It is a better security now than when they took it, and they do not know anything they could get which would be as safe. I think it will take the present rate of tolls to meet certainly the next \$400,000 maturing. The tolls would be lessened by the company. I wish to state that when the first \$400,000 matured, owing to the expenditure of this money, which we were anxious for, our receipts were not as large as they would have been if we had not been interrupted by giving up the canal to General Weitzel for the purpose of making these improvements. We, therefore, when the first \$400,000 matured, did not have the money of the canal company in hand to pay it. The directors went forward and borrowed \$100,000, or a little over, and nearly paid that, making a floating debt of it, \$5,000 being yet due. That \$100,000 has been re-imbursed, and the floating debt is now almost nothing. To raise the \$400,000 to be paid in 1876, if it is to be paid out of the revenue of the canal, as contemplated by the mortgage, it will take 50 cents per ton.

By Mr. CONKLING:

Q. Please name the present directors of this company, beside yourself.

A. J. H. Rohrer, E. Lockhart, J. W. Henney, and John Caperton.

Q. Do they, or any of them, and, if so, which, hold these bonds?

A. I do not think any one of them holds a bond. I know I don't, and I speak for Mr. Henney. Mr. Caperton is here, and can speak for himself.

Mr. CAPERTON. I have not any.

Mr. LOCKHART. I have not any.

Mr. SPEED. I know that Mr. Rohrer has not any.

By Mr. SHERMAN:

Q. Who fixes the rate of toll? Is that fixed by the legislature of Kentucky, or fixed by you under the law?

A. By us under the law.

Q. It is at your discretion, then, to lower it or not?

A. Yes, sir.

Q. Is there any maximum fixed?

A. I do not think there is. The tolls were 80 cents a ton a good many years ago.

Q. And you reduced them to 50 cents?

A. Yes, sir.

Q. Is there any want of power in you to reduce these tolls down to an amount sufficient to pay the interest?

A. I suppose there would be. But we expect to pay the principal; the parties who want in 1876 their principal as well as the interest.

Q. That is a long time ahead, but is there any want of power?

A. No, sir; I should suppose not.

Q. Would the trustees at the assumption by the Government of the United States of the principal of the debt have any hesitation in acting upon their discretionary power to reduce all their rates of tolls to a rate that would satisfy the Government?

A. Well, sir, I do not think I would like to do it. I cannot speak for the others. I think that when I accepted that trust, and agreed to pay that money according to the mortgage under the law, it required us to pay it out of the revenues, and I think we would be faithless in our trust not to create a revenue at least both to meet the principal and interest.

Q. You would be willing to collect the money two years before it was due, and you refuse to accept the obligation of the United States—

A. No, sir; I want to explain. For instance, we are now paying the bonds due in 1876. We are taking them up, and always have done it except once, when I went to Congress, and I recollect that very question which you put to me there when we wanted Congress to relieve us altogether, and take charge of the property. We then had \$238,000, which I wanted to turn over. I visited Washington at the instance of Mr. Guthrie. I recollect handing you, Mr. Sherman, a pamphlet, and talking about it.

Q. I think I told you to apply it on the bonds.

A. No, sir; you rather doubted the statement that anybody should want to give up such a thing as this, and pay the \$238,000, and complimented me by saying that if you had not seen my name to it you would not have believed it.

By Mr. CONKLING :

Q. Are these directors rendering gratuitous service? I do not speak of the officers, but of the directors. I mean, are you paid or unpaid?

A. They pay me \$1,500 a year as president.

Q. That is, as an officer; but I speak now of you as a director.

A. We get nothing as directors; nothing in the world but 6 per cent. on a hundred dollars.

Q. What officers are paid?

A. We have a treasurer, a book-keeper, and a vice-president; that is all the directors.

Q. And the president also?

A. The president is one of the five.

Q. But you have as officers a president, and vice-president, a treasurer, and who else?

A. A book-keeper.

Q. He is an employé rather than otherwise?

A. He keeps the books of the company.

Q. He is an employé and not an officer, I take it?

A. He is one of the directors.

Q. Then you have an attorney?

A. Yes, sir.

Q. Without asking the question directly, if you would like to state, I would like to know how beneficial this officership is to you and to the others.

A. I will state my own salary, which is \$1,500.

Q. And that of the others?

A. The vice-president receives \$1,000. The treasurer receives \$1,000. The bookkeeper, who keeps the vouchers and everything, receives \$1,500; and the attorney for this company receives the enormous sum of \$500 a year. I wish to state, in justice to my associates, that from the beginning, no matter where we may be misrepresented, the five gentlemen are always willing to give up this canal whenever you will take it off our hands and relieve us, according to the law, of the trust incurred. We took great pains—I know I did—to sell these bonds at a good price.

By Mr. CONKLING:

Q. And your statement, if I understand you right, is that in graduating this tonnage at 50 cents per ton, carpenter's measure, you have had regard to fixing a sum, and only a sum, which would be adequate to discharge this trust?

A. Yes, sir. If the debt was reduced to \$100,000 there would be no more tolls collected than would pay the interest on that \$100,000 and discharge it and pay for dredging and keeping the canal in order.

By Mr. DAVIS:

Q. Is the Government or yourself keeping it in order now?

A. We are. We have to put in an entire new set of gates this year which we built.

Q. Do you speak of the old or of the new?

A. Both new and old.

By Mr. CONKLING:

Q. And you use both sets of locks now?

A. Yes, sir.

Q. The old ones for smaller boats and the larger ones for boats demanding a larger accommodation?

A. Yes, sir.

By Mr. NORWOOD:

Q. Is your rate of toll now less than it was before you made the payment of the first installment?

A. No, sir, it is not; and in justice to the board I ought to explain that, as probably what I said before did somewhat explain it. Owing to the interruption, which we were very glad of, in the receipt of tolls, the revenues of the canal did not meet the first installment of bonds of \$400,000; but the directors paid those bonds, they borrowing the money. They did not have the money.

Q. I remember you stated that you borrowed \$100,000?

A. Yes, sir; we paid that, and then the revenue of the canal had to be continued because we had to re-imburse that and pay it.

Q. But has not the tonnage been increased annually?

A. Yes, sir.

Q. Did not that enable you to make a proportionate reduction?

A. Well, sir, we have not made any, because we are looking forward to paying—we don't think that 1876 is so far off. We are looking forward to prepare for that time, and not to holding the money. But I wish to state, in justice to my associates, that we have brought down the debt from \$1,200,000, at the beginning of the year, to \$1,172,000. We bought these bonds within the year.

By Mr. CONKLING:

Q. And as you find yourself in the possession of a sum of money you buy in so many bonds?

A. Yes, sir.

Q. The interruption of tolls you speak of was from the enlargement of the canal?

A. Yes, sir. It was necessary, and we did not complain of it.

By Mr. DAVIS:

Q. In buying those bonds do you get them at the quotation, or do you pay a hundred cents?

A. We do not pay a hundred cents. We buy them at whatever we can and charge them up at whatever we pay for them.

By Mr. NORWOOD:

Q. Then your toll is levied for three purposes; you first pay all the current expenses?

A. Yes, sir.

Q. Secondly, you pay the annual interest?

A. Yes, sir.

Q. And, thirdly, you have a reserve-fund sufficient to pay installments coming due?

A. Yes, sir.

Q. Now as to 1876, would you not be enabled to reduce that toll?

A. I think so, sir.

Q. One-half of the debt would be paid then?

A. Yes, sir.

By Mr. SHERMAN:

Q. Has the Secretary of the Treasury offered you bonds of the United States or money, or written to you proposing to pay money for the bonds?

A. No, sir, not directly to me; but I understand that the United States district attorney has been written to upon that subject.

Q. Has the Secretary of the Treasury ever written you that the Government of the United States would assume the payment of this bonded indebtedness?

A. Never, sir. I thought I had stated very clearly that this was the first communication I had ever received from the Secretary of the Treasury.

Q. I will say that I understood from others that the Secretary had proffered to pay the market-value of these bonds, and it was rejected.

A. I cannot say what the Secretary has done, but I can say that I have never heard of it.

By Mr. CONKLING:

Q. You speak of the diminution of tolls after 1876. Let me understand you. Can you diminish tolls after 1876 more than before, except in respect to increase of tonnage? To make my question more definite, will not the next installment be as large as the coming installment, and is not the period at the end of which it must be paid of the same duration as the now elapsing period?

A. The period from 1876 to 1881—

Q. I speak of principal, and not interest.

A. Of course, I think the increased tonnage of the canal and the decrease of interest, the directors not desiring to claim more than to pay the interest on the debt, would allow of a reduction of tolls.

Q. And it is in respect to those two elements that you could diminish?

A. Yes, sir.

Q. As to the payment of the installment of interest, the quantities in the same would be exactly as they are now?

A. Just exactly as they are now, but it would be a very considerable gain upon the interest. There would be 6 per cent. interest on \$800,000. I hope and trust that in 1876 we will not be as we were in 1872.

Q. It would be 6 per cent. interest on \$400,000, would it not?

A. Yes, sir; but half the debt will have been paid in 1876.

Q. But only \$400,000 from this time on?

A. Yes, sir. I was going to say that I hope and trust we will be able to pay the 1876 debt, and then commence earning for 1881 earlier. I stated that when 1872 came we had to borrow \$100,000. I hope we will not have to do that. I do hope that before that time these bonds will be paid.

By Mr. NORWOOD:

Q. Does your statement show the percentage of increase in the tonnage?

A. It does not. I know it is very great.

Q. Can you estimate what would be the proportion of decrease in the rate of tolls, based upon the increase of tonnage?

A. I have made some little estimates myself, without going into detail. I think the tolls could be decreased 25 per cent. after the next \$400,000 are paid; that is, after 1876.

By Mr. CONKLING:

Q. Reduced one-quarter?

A. Yes, sir; that is, however, a mere opinion.

By Mr. DAVIS:

Q. Does not the completion of the new part of the canal and enlargement increase the tolls?

A. Yes, sir.

Q. Do you take that into consideration when you say 25 per cent.?

A. Yes, sir. We have had the new locks at work.

Q. But only for a year or two?

A. Yes, sir; but still it has been a trial. If commerce increases it can be increased more. I state that, looking at things as they are at present.

By the CHAIRMAN:

Q. How much money has the Government paid that has not been reimbursed, including these last \$300,000?

A. Do you mean how much has the Government appropriated since the war?

Q. No, sir; the whole amount.

A. You gentlemen who are members of Congress can recollect that more accurately, perhaps, than I can. I did not charge my mind with that.

Q. What is the term of office of the directors?

A. It is no particular time. They are a sort of trustees, and I think the law is this, although I never looked at it, that if a man dies somebody whom they elect takes his stock at par—pays a hundred dollars for it.

Q. Who elects?

A. My brother could answer that question; I am not familiar with it. We have proxies who are required to vote.

Q. Is not the Government a stockholder?

A. No, sir.

Q. Is there no stock owned by the United States now?

A. My brother will answer you that question better than I can.

Mr. JAMES SPEED. Of course, there is stock owned by the United States.

By Mr. CONKLING:

Q. Who votes on the stock of the United States by the charter of Kentucky?

A. Each stockholder.

By the CHAIRMAN:

Q. The five?

A. The five stockholders, except the original stock which was subscribed. The Government can vote that if it chooses; but the charter under which the whole private stock was absorbed gives the right to those trustees to vote that stock until the Government takes charge.

By Mr. SHERMAN:

Q. Did the Government assent to that stipulation?

Mr. JOSHUA F. SPEED. O, yes; you will find that in Mr. Guthrie's letter.

By the CHAIRMAN:

Q. What is the annual income of the canal?

A. About \$200,000 a year.

Q. Is that net?

A. Gross.

Q. What are the expenses?

Mr. LOCKHART. About \$60,000, or somewhere in that neighborhood. This year it would be a good deal more. We built new gates, which cost the company \$30,000.

Q. Please state the size of the canal and the locks.

JOSHUA F. SPEED. I will get our superintendent to answer that question.

By Mr. NORWOOD:

Judge Miller says in general terms, "This is a distinct and clear appropriation of \$300,000 for continuing the work in which the Government had for several years been engaged, and on which it had spent, aside from its stock, near a million of dollars." I judge by that nearly \$1,300,000 have been expended.

Mr. SHERMAN. I think it is more than that.

Mr. JAMES SPEED. I think it is more than that.

Mr. JOSHUA SPEED. It was not a part of our duty to inquire into that at all.

Examination of Captain MILTON B. ADAMS, United States Engineers: .

By the CHAIRMAN:

Question. You have charge of the work of the improvement of the Louisville and Portland Canal?

Answer. I have charge in the absence of General Weitzel.

By Mr. SHERMAN:

Q. What amount of money has been expended by the Government of the United States upon this work since the close of the war?

A. I cannot say exactly. My connection with the work commenced only a year ago. It is about a million of dollars, I think, since the war. I have just sent for some statistics upon that point.

Q. How much during the last year?

A. One hundred thousand dollars.

By the CHAIRMAN :

Q. Please give the dimensions of the canal.

A. Two miles and one-tenth in length, and from 80 to 90 feet in width. The width is not uniform; in some places, for purposes of navigation, it is made wider. Where there is a bend the boats would require a wider space to navigate in than where it is perfectly straight.

Q. What is the size of the locks?

A. Three hundred and fifty-six by eighty feet; or they would clear a 320-foot boat over all.

Q. How many of them are there?

A. Of the new locks there are two.

Q. Only two locks in the entire canal?

A. In the entire canal there are six.

Q. What is the lift of each?

A. The lift of the first lock in the new canal is 14 feet, and of the second one is 12 feet. That is all in the new canal. In the old canal there are but three. There are only three of them, the lift being eight feet for each.

By Mr. SHERMAN :

Q. One is a protection-lock?

A. One is a guard-lock. That would make the entire fall 26 feet in the new and 24 feet in the old.

By Mr. DAVIS :

Q. Is the fall in the old and new alike?

A. It is not precisely the same; there is a slight fall between the mouths. The bay above the two locks is the same, but the mouth of the new lock is some 1,400 feet farther down the river than the mouth of the old lock, and the fall of the river in that distance makes the difference of elevation.

Q. Are you at work now on the lock?

A. Not upon the lock. We are at work upon the improvement. We are at work at the entrance to the canal and just below the outlet of the two locks. We have just been forced out. A rise has driven us out. We were working there on Saturday last.

Q. What doing?

A. Excavating rock. There is a reef extending along the apron-dam leading into the canal where we expect to remove 6,000 cubic yards of stone, and benefit the entrance. We have removed, during the present season, although a short one, about 2,000 yards. At the outlet of the new locks, the miter-sill at the lower gates was lower than a reef of rock which extended out into the river, thereby obstructing the navigation, and was an obstacle right in front of the lock. We were obliged to surround that reef with a coffer-dam, and take it out. We finished Saturday a channel 90 feet in width, right through that reef.

Q. Is the appropriation of \$100,000 of this year sufficient to finish the work entirely?

A. It is sufficient to finish that work of improving the canal proper. A portion of it will also be expended in sodding and planting the slopes in grass or ornamenting the slopes in some way. But there is an additional sum required in case the channel known as the Indiana Chute, which is a channel of the main river, over near Indiana, should be improved by the excavation of stone through that channel. It will require an additional appropriation of probably between \$50,000 and \$75,000. There has been no accurate estimate made of it.

Q. What is that chute used for ?

A. It is used in case of the water being high enough to allow boats to go down the river and through that chute. When the river gets up 8 feet on the falls, or even lower than that, 10 feet in the canal would be 8 feet down the Indiana chute. Boats will then go down through there in preference to going through the canal.

The dam that we have built crosses the head of the rapids has a gap. It is not completed yet, but it is intended to have a gap 400 feet in width, in that dam to allow boats to pass down and under the bridge and around by the main river-channel instead of going through the canal. There are some reefs of rock in that, which if blasted out would very much benefit the channel-way, and improve the navigation.

Q. Can coal-boats and tugs go down the river ?

A. They can in case of a sufficiently high water.

Q. What do you call sufficiently high water ?

A. I mean 20 feet on our gauges, which would be ordinary water.

Q. Then it would take 20 feet of water for a convoy of coal-boats to go down the main stream, would it ?

A. Yes, sir ; it would take 20 feet of water in the canal. The exact height I would not like to state, as I have not given that attention to that part of the river that I have to the canal proper. My attention during the entire year has been confined to the improvement along the canal itself. I presume some of the river gentlemen, or perhaps Mr. Lockhart, might answer that.

Q. My object was to find out if the coal convoys could go down the river on ordinary water without going through the canal.

A. Ordinarily they do not go down there, even though the water may be favorable, because the water is very rapid, and there is danger of their colliding with the piers of the bridge ; and the channel is tortuous, and they may break up their tows.

As a general rule, even where they have favorable stages of water, they go through the canal ; but single flat-boats or steamboats very frequently go down through the Indiana chute.

Q. Can you state whether the coal which comes down the river for towns below has to pay 50 cents for passing through the canal ?

A. I believe it does not. They pay but 25, and those coal-barges are but half-rate as I have understood. I have always understood that they were half-rated.

Examination of ENOCH LOCKHART.

By Mr. DAVIS :

Question. You have charge, I believe, of the locks of the canal ?

Answer. Yes, sir.

Q. How much water does it require for a convoy of coal-boats to go down the river without going through the canal ?

A. For these large coal-boats it takes about an average of 11 feet of water in the canal ; it makes about 8 feet of water in the falls.

By Mr. CONKLING :

Q. About 8 feet do you say ?

A. Yes, sir ; over the rocks—what is called over the rocks—so that they can go safely over.

By Mr. DAVIS :

Q. How much rise would that be in the river, as it is usually called ?

A. A rise, say at Cincinnati, of 25 feet of water, would make what we call a stage of water in which coal-boats could go over the falls.

Q. Then the present stage of water would not allow coal-boats to go over?

A. No, sir; there is not quite water enough.

Q. If a convoy of coal-boats were to come to the canal, would they have to break up?

A. Yes, sir; they would have to break up their tows.

Q. To what extent?

A. They have to single out to tow through, putting them in a train like a train of cars, one right behind the other.

Q. Do I understand you that only one boat would go abreast?

A. They sometimes go through double, but then there is more risk of catching of the sides and danger of sinking them. They generally string out, and go one right after the other. They find it is the handiest and quickest way. When you go to the locks you double up.

Q. How many boats?

A. That depends on the size. These common coal-barges take in six in these new locks. Two were taken in the old locks. When it comes to coal-boats, we only put three in the new locks, and one in the old locks. That is the way it is generally worked. They would be three and three abreast if they double up in that way.

By the CHAIRMAN:

Q. What is the ordinary tonnage of these barges?

A. I suppose these barges now would carry about 12,000 bushels of coal. I believe Pittsburgh coal weighs 76 pounds to the bushel. You would have to make a little calculation to see what the tonnage in that case would be. That barge would pay probably about \$60 to \$65. That is the way they run. Sometimes they vary in size. We measure them. Say the boat is 24 feet, throwing it into square feet, and she is charged 2 cents a foot.

By Mr. SHERMAN:

Q. What is the usual size?

A. Twenty-four by 130.

By the CHAIRMAN:

Q. What is the amount by the foot?

A. Two cents for loaded boats.

By Mr. DAVIS:

Q. Have you different toll upon coal and other merchandise?

A. Yes, sir.

Q. What is it?

A. It varies. Coal, salt, and iron are 2 cents per foot; regular produce 3 cents per foot.

Q. How much would that be per ton for coal?

A. I do not recollect now. Four hundred and eighty tons, say, would be \$62.40. They build the coal-boats larger than 24 by 130. They are built to carry from 20,000 to 25,000 bushels of coal; generally 170 to 175 feet long, and 24 to 25 feet wide.

Q. In addition to the boat, do you charge the tug having them in charge?

A. Yes, sir; she pays her custom-house tonnage 50 cents a ton, whatever she measures. That is custom-house measurement. Carpenter's measurement is different. Generally speaking, a boat on our waters

carries double what the measurement of the custom-house is. For instance, a boat measuring 500 tons will carry a thousand tons.

By Mr. CONKLING :

Q. So that on an actual capacity the charge is 25 cents per ton ?

A. Yes, sir.

Q. How if the boats run light, taking not only the tugs towing but the barges ?

A. When the barges are light, or rather empty, they pay only half price; but all boats with custom-house papers—steamboats I am speaking of—now pay their regular 50 cents per ton.

Q. Whether light or loaded ?

A. Yes, sir.

Q. But the barges—the convoys ?

A. They are put at half-price, if empty.

By Mr. SHERMAN :

Q. They return empty ?

By Mr. DAVIS :

Q. Do they ever go up the open river ?

A. O, yes; if the river is high enough, they go up around over the falls.

By Mr. CONKLING :

Q. How much water do they require to go up light ?

A. They can go up on about $10\frac{1}{2}$ feet on the canal light, with their empty barges.

Q. How much is that on the river ?

A. On the middle chute about $4\frac{1}{2}$ feet to 5 feet; say about 21 or 22 feet rise. That is what it takes to make that much water on the falls of the middle chute.

By Mr. DAVIS :

Q. What proportion of the year can boats run around the locks empty ?

A. For up-stream boats I would state from a month to six weeks. It varies according to the high water; but that much time at least up stream. Down-stream boats generally go over that; probably three to four months in the year. Steamboats I am speaking of; ordinary small tows.

Q. Are coal convoys ever injured by going around; by breaking up and losing the boats ?

A. Yes, sir; often.

Q. They are often lost.

A. Yes, sir; on the rocks.

By Mr. SHERMAN :

Q. Can you give us the number of steamboats, barges, &c., which passed the locks last year; I mean the number of vessels ?

A. I can from our books.

Q. Is there any record ?

A. O, yes; we keep a record of everything.

Q. There is a report ?

A. Yes, sir; of every boat that goes through.

By Mr. CONKLING :

Q. That record shows tonnage as well as number of boats ?

A. Yes, sir. It shows the measurement of those boats and barges of which I have been speaking, all which have custom-house papers.

By the CHAIRMAN:

Q. How long does it ordinarily take to pass a steamer through one lock?

A. Through the new canal it takes her about an hour. There are only two locks in the new canal, except the guard-lock, and that is on a level with the second pair of gates.

Q. The passage through the two miles of canal and through the two locks occupies, you say, about an hour?

A. It takes nearly two hours.

Q. About half an hour to each lock?

A. Yes, sir; the lock has to be filled with water, and then the opening of the gates, &c., consumes about an hour.

By Mr. CONKLING:

Q. What is the measurement of these locks.

A. What we should term the length is 370 feet from heel-post to heel-post; but then the lock runs in that direction, so that it would make them about 335 feet.

Q. Whose money built this canal originally.

A. The money of commerce. Money that we collected by tolls built the canals.

Q. The State of Kentucky put no money in it originally?

A. No, sir.

Q. But the private corporation was chartered and issued bonds, and the money realized on those bonds created this work?

A. Yes, sir; this last improvement. The other was a stock company.

Q. How was the original work constructed?

A. That was a stock company, and the government was a stockholder just the same as an individual.

Q. And the money subscribed by the stockholders built that?

A. Yes, sir.

Q. And what came afterwards was done with the avails of bonds issued and sold?

A. Yes, sir; we had over \$200,000 revenue to commence with in money that was on hand.

Q. The earnings of the canal?

A. Yes, sir; the tolls. The tolls then were reduced to 25 cents a ton. We reduced the tolls when all the stock was paid out, but the five shares, to 25 a ton from 50 cents. Mr. Guthrie was Secretary of the Treasury, and he asked that we do that. We thought that the Government would take hold of it.

By Mr. DAVIS:

Q. Are your charges uniform? Do all boats pay exactly alike?

A. That is what we try to do; to have it as near alike as we can make it.

Q. Does each boat pay as it passes through?

A. It is customary to pay at the locks as she goes through. We try to make it as near equal on everything as we can.

Q. You have no yearly boats, passing backwards and forwards, and paying in that way?

A. No, sir; nothing of that sort.

ceived 117,000,000, while they put Louisville at 15,000,000, and they go on and continue the report, and say that the little town of Smithfield receives 20,000,000. We think they have made a blunder there. We cannot conceive a state of things by which a little town of that kind receives 20,000,000 of imports and exports by river, while Louisville simply receives 15,000,000. I myself think it may be a misprint.

I merely refer to it, and call the attention of the committee to the fact, believing that it must be a misprint, and is not probably a true statement of the case. We think it fair to presume, while we have not kept a separate table of the receipts by river and the receipts by rail, that about one-third would be a fair amount of receipts by river of our exports and imports—that is, the receipts and shipments. The receipts implying the imports, of course, and the shipments the exports.

By the CHAIRMAN :

Q. What are the principal manufactures here ?

A. We manufacture a large amount of iron; we manufacture a very large amount of tobacco; and we manufacture a large amount of furniture. Our manufacturing interest has increased very rapidly.

Q. Where are your iron-ores procured ?

A. Some from Tennessee and some from Kentucky.

Q. By rail or water ?

A. Both ways. We get some from Alabama by rail.

Q. Can you give us the railroad and water charges on iron and iron-ores ?

A. No, sir. I am really not able to do that. It may be that by tomorrow we can supply you.

By Mr. DAVIS :

Q. What is the banking capital of the city ?

A. I don't know that I could answer that correctly without looking at the tables. I should think about eight and a half millions, without referring accurately to figures.

Mr. SPEED. It is 12,000,000.

Mr. DAVIS. Your banks have not suspended paying currency since the late trouble.

The WITNESS. No, sir; but a few of them. The German banks suspended, but they are all in line now, and moving along in their regular business.

By Mr. NORWOOD :

Q. Reading from the list of exports and imports, you remarked parenthetically about the tobacco that was all sold here and shipped to other points.

A. I will say that I remarked of the 49,000 hogsheads received, about 40,000 hogsheads were absolutely sold in our market. The great bulk of our tobacco goes by rail from here to Cincinnati and it is transmitted by rail there.

Q. I wish to ask you whether you meant to make that an exceptional case in your exports and imports, or do you mean to say that there are other articles which come in here, passing through the city, that come under the head of imports and exports, just as that tobacco might have gone ?

A. Do you mean to ask me if there are other articles in the same category with the tobacco ?

Q. Yes, sir; under that class.

A. No, sir; I do not know of others. We are a large receiving-market

for tobacco for consumption and for its sale. At all of our warehouses it is sold. It is sold at public auction. I believe we have some seven warehouses in the city of Louisville which receive tobacco. It is sent here and sold to speculators, or for export out of the country. That is, shipped by boat from here to Cincinnati frequently, and there it is transferred by rail through to New York.

Q. I understand that you prepare a considerable amount of cement. You read out an item there of cement barrels, forty-odd thousand. Did you mean cement barrels or barrels of cement?

A. Barrels of cement. We are large producers of cement. I should observe upon that point that since 1869 and 1870 the production of cement has increased over 50 per cent. Mr. Speed, who has deposed before you to-night, is the president of one of the largest companies that we have.

By the CHAIRMAN:

Q. Do you import wheat, corn, or flour now to any considerable extent?

A. Yes, sir; we import a good deal of flour.

Q. Do you export it?

A. Not much. We do export a good deal, that is true—nearly equivalent to our imports—probably fifteen to twenty thousand barrels this season, I think, as the report shows.

By Mr. DAVIS:

Q. Are articles arriving by rail and transferred from one road to another included in your exports and imports?

A. They are.

Q. But not arriving and passing through without being handled?

A. No, sir. They are handled and transferred by cartage, &c., and go through our city.

Q. It is only that portion of it which is spoken of?

A. Yes, sir.

Q. How about cotton coming from the South and passing through, is it included?

A. Yes, sir; it is included in our exports and imports. We are not a cotton market, and sell but very little cotton. All western cities are very small receivers of cotton for sale.

Q. Does cotton, to any extent, arrive here by rail from the South and go on by water?

A. Yes, sir; the bulk of it goes on by water from here to Cincinnati.

By Mr. SHERMAN:

Q. It comes by rail and goes on by water?

A. Yes, sir.

The committee here adjourned.

WEDNESDAY, *October 29, 1873.*

The committee met.

Examination of Captain ADAMS, United States Engineers, continued.

Mr. ADAMS. In pursuance of your request, I furnish a copy of the act of last winter contained in the Army orders, which reads as follows:

For completing the Louisville and Portland Canal, one hundred thousand dollars; and the Secretary of the Treasury is authorized and directed to assume, on behalf of

the United States, the control and management of the said canal in conformity with the terms of the joint resolution of the legislature of the State of Kentucky, approved March twenty-eighth, eighteen hundred and seventy-two, at such time and in such manner as in his judgment the interests of the United States, and the commerce thereof, may require; and the sum of money necessary to enable the Secretary of the Treasury to carry this provision into effect is hereby appropriated: *Provided*, That after the United States shall assume control of said canal, the tolls thereon on vessels propelled by steam shall be reduced to twenty-five cents per ton, and on all other vessels in proportion.

Also decision of Judge Miller in the case of the United States *vs.* The Louisville and Portland Canal:

The United States vs. The Louisville and Portland Canal Company

Mr. Justice MILLER:

Upon a bill in chancery directed to the judges of the circuit court of the United States for the district of Kentucky, an application is made to me, at Long Branch, in the State of New Jersey, to enjoin the Louisville and Portland Canal Company from interfering with the engineer officers of the United States, and the persons with whom they have contracted for the work of making certain repairs and improvements in said canal, under authority of an act of Congress appropriating money for that purpose, approved June 10, A. D. 1872. An affidavit of the attorney of the United States accompanies the application, which shows that the judge of the district court for that district, the judge of the circuit court of that circuit, and the judge of the Supreme Court allotted to that circuit, are all absent from and without the district and circuit. I am of opinion, therefore, that, notwithstanding the provisions of the seventh section of the act to further the administration of justice, approved June 1, 1872, I have jurisdiction to hear the motion, and that it is my duty to do so.

The language of the act under which the agents of the Government are proceeding is important, and is found verbatim as follows in the act "making appropriations for the repair, preservation, and completion of certain public works on rivers and harbors, and for other purposes:" "For the continuing the work on the canal at the falls of the Ohio River, three hundred thousand dollars. And the Secretary of War is hereby directed to report to Congress, at its next session, or sooner, if practicable, the condition of said canal and the provisions necessary to relieve the same from incumbrances with a view to such legislation as will render the same free to commerce at the earliest practicable period, subject only to such tolls as may be necessary for the superintendence and repair thereof, which shall not, after the passage of this act, exceed five cents per ton."

A brief reference to the history of this canal and its relation to the Government of the United States is essential to an understanding of the matter presented now for consideration.

By an act of the Kentucky legislature of January 12, 1825, a corporation was chartered by the name of the Louisville and Portland Canal Company, to construct a canal around the falls of the Ohio River, with a capital stock of six hundred thousand dollars, divided into shares of one hundred dollars each, with the right to levy tolls on vessels passing through the canal. By subsequent statutes the capital was increased to ten thousand shares, and the United States, under acts of Congress, became the owner of twenty-nine hundred and ten of said shares. The canal was constructed, and has ever since been in successful and profitable operation; and the tolls collected under the limit of the charter granted by the State yielded such a revenue beyond what was necessary to keep the canal in repair, that, by the joint legislation of the State and the United States, and by the consent of the individual corporators, a plan was adopted and entered upon to make the canal free to the uses of commerce, except so far as might be necessary to keep it in repair. This plan was inaugurated by an act of the Kentucky legislature, passed in 1842, the provisions of which were accepted by the stockholders, including the United States. Its essential features were that the surplus revenues of the corporation should be used to buy up all the stock held by others than the United States, and that when this should have been accomplished the canal should be transferred to the control of the Government for the use of the public, subject only to such tolls as might be necessary for its superintendence and repair. This plan was so far carried out that, in the year 1855, all the shares other than those held by the United States had been purchased in, except five shares left purposely in the hands of as many individuals, to qualify them to hold office as directors of the corporation.

But while this process of extinguishing the individual shares had been going on, it became clear that the demands of commerce required an enlargement of the canal and a change in the place of its lower outlet, which could only be made by an additional or

branch canal. The successful use of the tolls in buying in the shares of private stockholders pointed at once to the means of making this increase in the capacity of the canal without burdening either the State or Federal Government, and by statute of the Kentucky legislature in 1857, and joint resolution of the two Houses of Congress of 1860, the canal company was authorized to do this work, and to borrow money for that purpose, and pledge the faith of the company and its tolls or revenues on the money so borrowed. The corporation accordingly issued its bonds for \$1,600,000, secured by a mortgage on the canal, its franchises and its tolls and revenues, and proceeded to expend the sum realized on these bonds in the enlargement and improvement of the canal. It was found, however, that when this money was all expended, the canal was still unfinished; and the Congress of the United States, in the year 1868, commenced a series of appropriations for the purpose of completing the work, which has been continued until the present time. Over \$900,000 have thus been appropriated and expended under the control and direction of officers of the Government, and the appropriation of 1872, already referred to, was in continuation of this work.

During this time the president and directors of the Portland Canal Company and the officers of the United States seem to have acted in harmony, the corporation collecting the tolls and paying for and superintending the temporary repairs. They have also paid the interest on the debt, and redeemed or bought in about half a million in amount of the bonds. This harmony would probably have continued but for the clause in the present act of appropriation, that "after the passage of this act the tolls should not exceed five cents per ton." It is the first time that Congress has attempted to regulate or limit the tolls to be collected of vessels using the canal. The rate thus limited would not produce enough to make the ordinary and necessary repairs and pay for the superintendence of the canal. It would leave the interest on the bonds unpaid and largely impair, if not destroy, the security of the bondholder for the payment of the principal.

The president and directors of the company construe the act as appropriating the money on the condition that the tolls shall be limited to five cents per ton, and they say that an acceptance of the appropriation would be an implied consent to this limitation. They, therefore, notified the officer in charge that they refused to accept the appropriation.

That officer, however, proceeded to let the work and commence operations, and the corporation interferes by physical force to prevent it, and I am now asked by the bill before me, filed in behalf of the United States, to enjoin the corporation from this interference.

That officers of the canal company maintain, first, that the corporation is the legal owner of the canal, and that neither the Government of the United States nor any one else has the right to assume such control of its property as the action of the engineer officer seeks to do without the consent of the directors of the company; and second, that a due regard to their duty to the bondholder and other creditors of the corporation forbids them from giving either express consent, or such consent as inaction would imply to the assumption of the United States to reduce the tolls found in the appropriation act.

The United States, by its counsel, on the other hand, maintains that since the year 1855 the corporation has had no existence as such, or, if it has any existence, is merely a nominal one as the agent of the Government for whose sole use it is kept alive; and that as the Government owns practically all the stock, it has and should have the right to control the use and direct the changes and improvements in the canal. This view is supposed to receive additional force from the powers and duties of the National Government in regard to the navigable waters of the United States.

The first, and perhaps the most important, question to be determined is the relation of the corporation and its officers to the possession and control of the canal.

The proposition of the Government counsel is based upon the idea that when, under the act of 1842, all the private stock had been bought, the Government became, without other action, the owner and entitled to the possession and control of the canal, and that both by operation of that statute and the necessity of the case the corporation ceased to have an existence, or at least to have any right or title to the canal; and this argument is made stronger, in the opinion of counsel, by the circumstance that at that time, to wit, on the 31st day of January, 1855, by a report to the Secretary of the Treasury, the directors advised him of the completion of the purchase of private stock, and the readiness of the corporation to transfer the custody of the canal to the United States as soon as the Department was prepared to receive it. But it does not appear that the Department was ready to receive the transfer. Certainly no formal act, either of Congress or of the Department, accepting this transfer or acknowledging the obligations on which alone it was to be so transferred, namely: To hold it for use of the public, free of toll, except so much as might be necessary for its superintendence and repair, is shown or claimed. On the contrary, in reply to the notification of the company, the Secretary requested them to continue their organization by retaining

a share of stock, for each director to maintain his eligibility as such, and to manage the affairs of the canal as heretofore.

But whatever doubt may exist as to the precise relations of these officers to the work at that time is removed by the subsequent act of 1857, of the State legislature, and the joint resolution of Congress of 1860.

These have already been referred to as authorizing the company to extend and enlarge the canal, and to contract a debt for that purpose; but as the language of the joint resolution of Congress approved May 24, 1860, seems to me to be conclusive of the continued existence of the corporation, I will give its precise terms. It was resolved, "That the president and directors of the Louisville and Portland Canal Company be and they are hereby authorized, with the revenues and credits of the company, to enlarge the said canal and to construct a branch canal from a suitable point on the south side of the present canal to a point in the Ohio River, opposite Sand Island, sufficient to pass the largest class of vessels navigating the Ohio River." The resolution had two provisions, one protecting the United States from liability for the debt so incurred, and the other declaring that when the work was completed and paid for no more tolls should afterward be collected than were necessary to keep it in repair and pay for its superintendence and management.

This resolution, beyond all controversy, clearly recognizes three facts of important bearing on the matter in hand: 1. The existence of the corporation called the Louisville and Portland Canal Company. 2. That it had revenues and credits which might be sufficient to enable it to raise means for this large and expensive work. 3. That it had the right, or it was then given, so far as the United States could give it, to use those credits and revenues for that purpose.

It is inconceivable that this company had any other revenue than the tolls from the canal, or any other credit than that which arose from the right to these tolls and the ownership or control of the canal.

To me it seems that this is conclusive of existence of the corporation and of its right to use and control the canal and its revenues so far as was necessary for the purpose contemplated by the act of the Kentucky legislature, and the joint resolution of the two houses of Congress.

But while these considerations prove the continued existence of the corporation, the validity of the contract by which they pledged the canal and its revenues for the money borrowed for its extension, and its duty to secure and protect this revenue, and to do all that may lawfully be done to prevent its destruction or diversion from that purpose, it is still true that the directors of this corporation occupy a very peculiar position, and one widely different from the directors of railroads, insurance companies, and other corporations for private gain. The United States is the only stockholder of this corporation. The directors have really no personal interest in the corporation or its property. They are, to all purposes, what equity calls trustees without an interest, the depositaries of a naked trust. For whom do they hold this trust, and for whose benefit must they exercise it? This inquiry, though lying at the foundation of the question to be solved here, is, fortunately, not a difficult one. There are three parties interested deeply in this trust, and in the manner in which its duties shall be discharged, which I name in the order of the superiority of their claims rather than their importance:

1. The holders of the bonds secured by the mortgage authorized and placed under a twofold legislative sanction, by the legislature of Kentucky and the Congress of the United States. 2. The United States, the holder of all the stock in the corporation, expending a million of dollars besides for the benefit of the canal; and 3. The public, the community, to whose use, free of all charges but those necessary to keep it in operation, it has been solemnly dedicated by the legislature of Kentucky, by the Congress of the United States, and by the action of the corporation itself, as well as by all the acts of all these parties from 1842 to the present time, so soon as the enlargement is completed and the debt created thereby discharged.

As regards the first of these I have no hesitation in expressing my entire conviction that the bondholders have a lien upon the revenue of the canal, and a right to insist that the corporation shall protect those revenues to the extent necessary to make entirely safe the payment of their debt and its accruing interest; and that until that debt is paid, or the mortgage satisfied or otherwise discharged, with the consent of these bondholders, this right of theirs remains, with the corresponding duty of the directors of the corporation. But the right of these creditors is limited to this, and, so long as their security is unimpaired, it is the duty of the directors to advance the other interests I have mentioned, for which they are trustees. The interests of the United States and of the public are, for present purposes, identical. The Government has, in all its actions, shown its desire and its intent that at the earliest moment the public use of the canal should be freed from all burdens save those necessary for its repairs and management, and the very act which has given rise to the present opposition of the president and directors is wholly in the interest of the public, and designed to hasten the end long contemplated by all parties.

Now, if the act of the United States in completing the enlargement of the canal is an act for the benefit of all these parties, the bondholders inclusive, the resistance of the president and directors is an act in detriment of their trust, injurious to all the interests confided to them, and a mere arbitrary exercise of power which should be restrained. If, on the other hand, any one of these interests would be seriously prejudiced, they should not be disturbed in the exercise of a reasonable discretion in the protection of that interest.

That the work itself, which is being done by the Government, is a useful and a necessary work for the public good, and for that of the United States as a stockholder and as the representative of the public, is undeniable; that it also adds to the value of the security of the bondholder, and is to that extent in his interest, is equally clear.

But in regard to the latter, if, as is alleged by defendant, the work is being constructed in a manner which so far obstructs the use of the canal as will endanger the revenue from which their interest is to be paid, or if, as the trustees seem to believe, the work, when completed under the present act of Congress, will extinguish the right of the corporation to collect sufficient toll to pay both principal and interest of their debt, then the work should not be done, for these rights are paramount.

In regard to the manner of doing the work, the affidavits submitted satisfy me that no such serious obstruction to the use of the canal, or to the repairs which the directors wish to make, will result from the work as that claimed by the defendant; none which should be set up for a moment in comparison with the great value to all parties of the vigorous prosecution and early completion of the work of extension and enlargement.

But I am satisfied that the president and directors are honest in their belief that an acquiescence on their part in the expenditure of this appropriation on the canal would bind them legally, as an acknowledgment of the Government limitation of the toll, an acknowledgment which would be a violation of their official duty. Of this result they will be rid if their action is controlled by a competent court against their protest. To refrain from disturbing the contractors and engineer in expending this money, when their hands are tied by an injunction, raises no presumption of acquiescence in the claim of the Government to reduce the toll to a minimum.

Should the court so restrain, or, if they are right in their construction of the statute, should they be permitted to resist congressional interference in the matter?

This leads me to a remark or two on the construction of the appropriation act:

The first sentence is a distinct and clear appropriation of \$300,000 for the continuance of the work in which the Government had for several years been engaged, and on which it had spent, aside from its stock, near a million of dollars. The subsequent sentence directs the Secretary of War to report to Congress what legislation is necessary to relieve the canal of incumbrance, so that it may be free from all other toll than what is required for its management and repair; and this sentence declares that such toll, after the passage of this act, shall not exceed five cents per ton.

That the appropriation is absolute, and independent of the clause concerning toll, I have no doubt. It might as well be argued that it was dependent on the report of the Secretary of War. Whether, therefore, the toll be reduced or not, the appropriation remains, and should be carried into effect.

When we consider that the next sentence recognizes the incumbrance of the canal, no doubt meaning the one in favor of the bondholders, so often mentioned in this opinion, and directs our inquiry as to what action by Congress is necessary to remove it, I can hardly believe that in the same sentence it was intended to destroy the essential thing on which that incumbrance rested, namely, the tolls. The argument is, therefore, not without force, that Congress meant, when they said such tolls should not exceed five cents per ton after the passage of this act, such act as they contemplated in future to pass to satisfy or remove that incumbrance.

It must be confessed that the language is not after this construction, and that in their caution the directors might well have supposed that Congress intended to limit the tolls at once to five cents per ton.

If this construction of the statute be correct, then I have no hesitation in saying that that part of it which so limits the tolls is void, for the plain reason that it is a legislative attempt to destroy vested rights, and a taking of private property for public use without due compensation.

I think I have shown that the prosecution of this work is for the benefit and advantage of all concerned; that it does not seriously interfere with the ordinary use of the canal, and that the accomplishment of the work will neither confer on Congress the right to regulate the toll nor validate the attempt already made to do so, if Congress really intended to make such an attempt.

Under these circumstances I have no hesitation in controlling the president and directors of the canal company in the exercise of the great trust committed to them, so far as may be necessary to permit the work to go on; and in exercising this control I feel satisfied that I am relieving them from an embarrassment and responsibility which they will gladly rest on the shoulders of the court. The injunction will be granted.

When I was informed last evening that you desired my presence here, no mention was made that there was to be a meeting for the purpose of transacting business, and I had no idea that there would be much before to-day; hence the absence of statistical and positive information in my evidence then given. To-day's meeting affords an opportunity of my bringing some additional matters to your notice.

COST OF CANAL AND DAM IMPROVEMENTS.

The money expended on the improvement of the falls of the Ohio, up to October 31, 1873, is \$1,400,719.72. The last month's estimate under this head is not made up, owing to the pay-roll for the month of October not being entirely completed; the above figures may, therefore, be slightly in error. The cost of constructing the two dams, the one at the head and the other at the foot of the falls, as well as the rock excavation, as far as money has been expended on that work at the two ends of the canal, is included in this figure. The cost, respectively, of the upper and lower dams is about \$100,000 and \$59,924, which would make the total amount expended on the canal proper, including money expended on excavation, about \$1,241,795.12. The following work has been done:

	Cubic yards.
Earth excavated	235,204
Rock excavated.....	124,553
Old wall removed.....	14,706
Paving removed.....	6,713
Masonry.....	47,724
Filling behind.....	8,764
Riprap.....	11,922

Cast iron, 163,719 pounds; wrought iron, 71,716 pounds; pine timber, 46,361 feet; oak, 5,009 feet. None of the money has been disbursed by me. The accounts are kept in the office of General Weitzel in Detroit, which, together with the shortness of the time, prevents me from giving you an exhibit in detail. At the office in Detroit are also to be found the principal official records of the Louisville and Portland Canal improvement, a fact which stands in the way of placing copies before you. Such as I have been able to get together, and with which I am familiar, during my short connection with the work, I respectfully submit.

RELATIONS OF THE GOVERNMENT ENGINEERS TO THE BOARD.

To explain fully the relation of the United States engineers to the officers of the board of directors of the canal, including the question of the injunction, it is necessary to state that General Weitzel, acting in the capacity of engineer for the Government, was directed May 11, 1867, to make a survey for a ship-canal around the falls of the Ohio, with special instructions to make as early a report as possible. Under these instructions in connection with his other duties, General Weitzel addressed a letter to Mr. James Guthrie, the then president of the canal, asking upon what terms the canal company would be willing to yield their trust. In answer to this letter, Mr. Guthrie wrote that as soon as the canal was widened and the indebtedness assumed, (the wording was not debts discharged; I make special mention of this fact for reasons that will appear further on;) the directors would gladly give the control of the canal over to the Government.

Unfortunately this letter is among the file of letters in the office at Detroit. Upon such an answer, and after estimates of the cost of an entirely new canal on the Indiana side of the river were made, General Weitzel reported in favor of the Government widening and assuming charge of the canal already built, then not of sufficient capacity for the accommodation of the larger class of steamboats navigating the Ohio River. Congress made appropriations of money from time to time as was needed, which was expended under the engineering and direction of General Weitzel, without any interruption on the part of the board of directors until the first clause appeared in the act making the appropriation looking to a transfer taking place. The act of June 10, 1872, making appropriation for the repair, preservation, and completion of certain public works on rivers and harbors, reads as follows :

“And the Secretary of War is hereby directed to report to Congress, at the next session, or sooner if practicable, the condition of said canal, and the provisions necessary to relieve the same from incumbrance, with a view to such legislation as will render the same free to commerce at the earliest practicable period, subject only to such tolls as may be necessary for the superintendence and repair thereof, which shall not, after the passage of this act, exceed five cents per ton.”

Mr. James Speed, as attorney for the board of directors, saw in this act danger to their trust being jeopardized, and advised the board not to accept the \$300,000 appropriation of that act, and to prevent the money being expended threw obstacles in the way of the further progress of the work. All this correspondence upon the subject between General Weitzel and the president of the board of directors appears in his report to the Chief of Engineers, 1872, which was settled, as explained, by the suing out of an injunction in July, 1872, and was decided before Associate Justice Miller of the United States Supreme Court and granted. The work since that interruption has progressed without further obstacles being thrown in the way of prosecution. The work of enlargement is now completed, and that of grading the slopes and completing the sustaining-walls nearly done, there being but a few days' work for the contractors, Sheehan & Leehy, who have the contract for completing the sustaining-wall and grading the slopes of the canal-bank, and yet the control of the canal has not been turned over to the United States Government. The reason for this, in my opinion, can be found in the fact that there was a conflict of laws, as passed by Congress and the Kentucky legislature, which prevented the Secretary of the Treasury from assuming the control as contemplated in the last act of Congress on the subject, the obstacles being placed in the resolution of the Kentucky legislature. Congress, I assume, framed its act upon the pledge of Mr. Guthrie's letter, and proposed to assume the obligations, which did not accord with the act of the Kentucky legislature, an obstacle to the transfer being purposely put in that act, which required that the debt of the canal should be discharged. Here are the two acts in question :

ACT OF THE KENTUCKY LEGISLATURE.

The resolution of the Kentucky legislature, which was approved March 24, 1872, has several conditions, numbered from 1 to 6, the last of which reads as follows : “That the Government of the United States shall, before such surrender, discharge all the debts due by said canal company and purchase the stock of said directors.”

ACT OF CONGRESS, MARCH, 1873.

"And the Secretary of the Treasury is authorized and directed to assume on behalf of the United States the control and management of said canal, in conformity with the terms of the joint resolution of the legislature of the State of Kentucky, approved March 28, 1872, at such time and in such manner as in his judgment the interest of the United States and the commerce thereof may require, and the sum of money necessary to enable the Secretary of the Treasury to carry this provision into effect is hereby appropriated: *Provided*, That after the United States shall assume control of this canal the tolls thereon on vessels propelled by steam shall be reduced to twenty-five cents per ton, and on all other vessels in proportion."

Q. Will you have completed all your work this fall upon the entire canal?

A. There is additional work to be done on the improvement of the falls of the Ohio.

Q. I am speaking of the canal proper.

A. The canal proper will be completed this fall.

Q. There has been no appropriation made for the falls proper, which you speak of, has there?

A. There has been an appropriation of a hundred thousand dollars made for the improvement of the canal, but which is not being expended on the canal proper. It is being expended on the dam at the head of the canal and on the rock excavation at the head and at the outlet of the canal. The widening of the canal, however, is virtually done, and has been done for some time. The widening consisted in excavating the rock to a width of between 80 and 90 feet. After that the bank was sustained by the construction of a sustaining-wall, which might not properly be included under the term widening. The widening was done last fall a year ago. Of course there are incidental expenditures which might go on for some time. We will sod the slopes and plant trees along the slopes. But that is merely an ornamentation of the improvement which might go on from year to year and never be at an end.

Q. Has General Weitzel asked additional appropriations this year for the canal?

A. Yes, sir; he has asked an additional appropriation of a hundred thousand dollars. That was not, however, for the canal, but for the falls. I believe it is his intention to expend it principally in the improvement of the Indiana chute.

ISAAC L. HYATT examined by the chairman.

Question. Please state your full name.

Answer. Isaac L. Hyatt.

Q. Are you engaged in the coal-trade?

A. I am; I have been engaged in the coal-trade about thirty years.

Q. From whence do you get your supply of coal?

A. The principal supply is from Pittsburgh, on the Monongahela River.

Q. State the transportation-charges on it, usually, from Pittsburgh here?

A. From Pittsburgh here the tow-boats and barges, which require a large capital, bring coal from 2 to 3 cents a bushel.

Q. Do you ship any by rail?

A. Very rarely. It is a rare thing that we get any by rail, unless it

is 40 or 50 cents a bushel and we are entirely out. We never bring any by rail. It is all brought now by tug-boats.

Q. Do you know anything of the relative charges on freight to this point by rail and by water?

A. No, sir; I do not know anything about the rail charges at all. I know they have brought coke here from Pittsburgh at about 8 cents a bushel. I never knew of any coal.

Q. That is by rail?

A. Yes, sir; I never knew them to bring any coal in that way.

Q. Is your supply of coal received here from Pittsburgh entirely?

A. It has been up to a year or two ago. For the last two or three years we have developed coal-mines in the southern part of Kentucky, and the Louisville and Paducah Road now brings about one-third of our whole supply.

Q. Do you know what their charges are?

A. They bring coal from eighty to one hundred and ten miles on the road for 6 cents a bushel.

Q. What is the distance from here to Pittsburgh?

A. By river, do you mean?

Q. By river.

A. Six hundred miles.

Q. And they bring it for from 2 to 3 cents a bushel?

A. A man who is regularly in the coal-trade can bring coal from the mouth of the Monongahela River, which is slack-water to Louisville, and return the barges that they bring it in for 3 cents. It has been towed here. They have towed a large amount of it up there in large floats, but they have no market for it from here up, but for the lower market. That coal is brought here at about 2 cents.

By Mr. SHERMAN:

Q. Would you not put the distance to Pittsburgh at six hundred and fifty miles? You said six hundred miles.

A. They used to call it six hundred and fifty miles, but there have been some improvements in cutting off, which makes it now about six hundred miles.

By the CHAIRMAN:

Q. Are there any serious difficulties encountered by coal-barges on the river?

A. By the obstructions on the river, do you mean?

Q. Yes.

A. There are some. In running coal from Pittsburgh we always have to go on freshets—high water—8, 10, or 15 feet—when the season commences. We generally commence about this month. We generally have a freshet there, sometimes every two weeks, sometimes every once a month. Sometimes we would miss a month, and have water up to about the 1st of June.

Q. How is it that one-third of your supply comes by rail at 6 or 7 cents a bushel, when you can bring it from Pittsburgh for 2 or 3 cents a bushel? How do you account for that shipment by rail?

A. In the first place the Pittsburgh coal is worth more than the coal on this river—about 3 cents a bushel—for manufacturing; in the next place, Monongahela River companies there have a sort of monopoly of the coal interest. For instance, they make immense profits on coal though labor is high. The coal costs them generally now from 7 to 8 cents.

Q. At Pittsburgh?

A. Yes, sir.

Q. At the mines?

A. No, sir; delivered at Pittsburgh. Then the freights here and back are about 3 cents. That makes coal cost them here about 11 cents. But, then, they have a large capital—for instance, to carry a tow-boat and a set of barges to go regularly into the trade. A tow-boat which has the capacity to bring down one hundred and fifty thousand bushels of coal on a freshet requires a capital of about \$75,000 to \$100,000. In running coal by barges, while the boats can bring but ten, it requires thirty to make it a success, from the fact that they have to have ten up there loading, ten here unloading, and ten on the way. For instance, a boat brings down ten barges to Louisville. She takes ten empty ones up, and the boat is not delayed here at all. All her lost time is at Pittsburgh, waiting for the freshet.

By the CHAIRMAN:

Q. The point I find difficult of understanding is why you should bring it by rail at 6 or 7 cents when you can receive it from Pittsburgh for from 2 to 3 cents. Why is it brought by rail at all, when it can be brought here much cheaper by water?

A. The reason for that is the superiority of the Pittsburgh coal over this. It will command a better price.

By Mr. CONKLING:

Q. The Pittsburgh coal will?

A. Yes, sir.

Q. Then why should you give them more freight for other coal from another place?

A. That is brought by the river.

Q. Why do you not get all your coal, if it is better, from Pittsburgh, and bring it at a cheaper rate?

A. Pittsburgh has not been able to supply us at moderate prices. It has been in the hands of the monopolists.

By Mr. SHERMAN:

Q. Does not the railroad reach the mines?

A. The coal below is on the line of the railroad.

Q. And the coal is cheaper at these mines here than it is at Pittsburgh? Is that what you mean?

A. For instance, you take Pittsburgh proper and the coal is brought down the Monongahela River, and generally costs from $7\frac{1}{2}$ to 8 cents. This other coal, when you start it from the mine, costs from 5 to 6 cents.

Mr. SHERMAN. On the car?

The WITNESS. Delivered on the car; then the freight is about 6 cents. The railroad companies say that is about cost. Louisville subscribed very heavily to build that railroad, and they bring the coal cheaper for the benefit of Louisville.

By Mr. NORWOOD:

Q. If you add the cost of transportation to the price of coal in Pittsburgh and do the same on the coal, as you did in Kentucky, what is the difference in the value of the coal in this market?

A. Do you mean in the difference of the cost? Do you want the difference in the cost of the delivery?

Q. The difference in the price here. Add the cost of transportation to the cost of the coal in Pittsburgh, and then add the cost of transpor-

tation by rail and the price of the coal at the mine together, and then state what is the difference between the value of the coal in this market—between the Pittsburgh coal and this other coal?

A. My experience in regard to that is this: You want to know the difference. You want to know the difference in the quality of coal to the consumer, or the difference in the cost.

Q. You have stated that the reason this coal was brought here by rail, that costs about twice as much freight as the Pittsburgh coal, is that it is a cheaper coal. What I want to get at is, how much cheaper that coal is here, after you have added the cost of transportation, than the Pittsburgh coal.

A. The Pittsburgh coal is the cheapest.

Q. Then the question recurs, why is it that you buy coal down here and bring it in by rail?

A. The reason is that coal comes into this market when the Pittsburgh coal is of a high price. For instance, we have to hold on to Pittsburgh coal. Sometimes we get no receipts for four or six months. That coal has to be kept here. The consequence is that it advances as capitalists get it, and when it advances above what the cost of this coal is coming here, and the difference in the value of it, they take that. Then there are a great many who buy it for the purpose of patronizing their own State, and they want to encourage them to open the mines. In the next place Louisville has never been fully supplied with Pittsburgh coal for the last five or six years. They cannot bring enough.

By the CHAIRMAN:

Q. This is procured by rail on account of the scarcity of Pittsburgh coal, owing to the want of transportation from Pittsburgh?

A. Yes, sir.

By Mr. DAVIS:

Q. If you had 6 feet of water in the Ohio River the year round could you transport coal during the entire year?

A. Yes, sir; but you could not transport it with the present arrangements. They could transport coal all the time on 6 feet of water by being prepared for it and having lighter tugs and lighter barges, making more trips and bringing less coal. For instance, a tow-boat could be run very successfully from here to Pittsburgh, regularly, with 6 feet of water, with a capital of \$40,000, and she would bring about 65,000 to 70,000 bushels a trip. They run more economically.

Q. Your opinion is, then, that if the Ohio was improved so that you would have 6 feet of water the year round, that even in the summer you would have an arrangement to bring coal?

A. Yes, sir; to bring coal the year round.

Q. Would that have the tendency to make coal cheaper in this market?

A. Yes, sir. If we had 6 feet of water from here to the Pittsburgh mines on the Monongahela River I am satisfied that it would make a difference upon an average of 5 cents a bushel, and also at Cincinnati the same. It would be the same at Cincinnati as it would here.

Q. Do you use Kanawha coal here?

A. Yes, sir; we use some, but there has been no large amount of it brought here as yet. We have had, however, some of it here.

Q. What is the difference in value between that and Pittsburgh coal in your market?

A. Well, sir, we have made no difference at all, in some mines of the

Kanawha. There are some two or three mines—say the Raymond City and the Coalburg coal—bring the same price; but at the same time it is rather a fancy semi-cannel coal, which does not have that same amount of black soot from it, and gentlemen who own fine houses want to get shut of as much dirt as possible, and will buy this because it is not so dirty as the Pittsburgh, for burning in grates.

Examination of PINKNEY VARBLE:

Question. What is your business?

Answer. Piloting on the falls and boating generally.

Q. State to the committee anything you may have to say with reference to obstructions or difficulties in the navigation of the river, and remedies, if you have any.

A. Do you mean so far as the falls are concerned?

Q. Anything with reference to the navigation of the river. At what stage of the water can you navigate the falls without going through the canal?

A. With steamboats we can navigate from 3 to 7 and 8 feet. We hardly ever take any steamboats less than 3 feet. They are very light boats. Coal-boats and barges we cannot take in. They are generally loaded from 6 to 8 feet. What we call a coal-boat is loaded from 7 to 8 feet, and a coal-barge from $5\frac{1}{2}$ to 6 feet. We require to take a fleet of coal-barges about $8\frac{1}{2}$ feet drawing 6 feet; the barges drawing 6 feet we require about $8\frac{1}{2}$ feet.

Q. What rise at Cincinnati does a 3-foot rise on the falls here represent?

A. There are now 22 feet there and $6\frac{1}{2}$ feet in our pass or dug chute. But we only can take steamboats of less width than 40 feet; the channel is 48 feet. We count about 3 to 1. Nine feet at Cincinnati would be about 3 feet here. The river is wider here and requires about 3 feet rise up there to one here.

Q. About what period each season can you pass over the falls?

A. We are governed a good deal by the head-waters from the upper rivers, and it commences about this time of the year. This is a little early. It holds on up to about July and August. We don't have less than 3 feet of water, I don't suppose, hardly ever, before about August or July. We often take boats over in July and August.

Q. Then August, September, and October are the months in which you are unable?

A. September, October, and part of November is our low-water season here. We scarcely ever have any rise here in September and October.

By Mr. DAVIS:

Q. You spoke of 3 feet of water; that would not allow of coal-boats passing?

A. No, sir; when there is 3 feet on the falls that is 5 feet in the canal, and we don't take anything over the falls unless it is a steamer of light draught, or barges.

Q. How long during the year can you generally take convoys of coal over; between what periods?

A. An average of seven or eight months.

Q. When a coal convoy comes to the falls do you have to break it up, or take it part over at a time, or all at a time?

A. That is owing to the state of the water. Since this bridge has been built they have to break up, but before that, when we had 10 feet

and over we could take the whole fleet as much as they would hitch on to the boat. But now the span is only 400 feet wide, and we cannot take over about half the tow that they take below, but generally can take all the tow that they bring from Pittsburgh here. They take larger tows below here than they can fetch out from above.

Q. Is there any loss; many boats wrecked going over; and, if so, what is the proportion per year?

A. Indeed I could not tell you what proportion it would be very well. We have very few lost on the falls.

By Mr. SHERMAN:

Q. Do you know the rate of insurance against loss?

A. No, sir; I don't think there is any extra charge made for the falls.

By Mr. DAVIS:

Q. Do all boats that come down, including coal fleets, have to take on a pilot?

A. Mostly; unless the water is very high. Sometimes they have men who have been running for a long time, and they take their own boats over. If it is anything like a close fit they always get a pilot.

Q. What charge is there for it?

A. That is owing to the size of the boat and the size of the tow. Steamboats run from \$10 to \$30, the larger size \$30; that is, 1,600 to 2,000 ton boats. Tow-boats run from \$20 to \$40, owing to what they have in tow. I have taken tow-boats over with as many as fifteen barges, even since the bridge was there, but it is not considered safe. Before the bridge was there we could take more.

Q. Do boats usually ascend when they can descend?

A. No, sir; there is no water for ascending boats until there gets 8½ feet down stream. Then they begin to get water on this side, or on what we call the Kentucky chute. Eight feet and a half makes 4 feet up this side. But there are some very powerful and well-handled boats that bring up the other side. It is not a general thing. The main current of the falls is down the other side, on what we call the Indiana chute.

By the CHAIRMAN:

Q. What is the length of time in passing the falls each way?

A. We generally have to run up a short distance and get shape. With a single steamboat we can go over and land at Portland in three-quarters of an hour. The way we run it is about four miles. We have to run up a piece.

Q. How many months in the year can you go up stream, over the falls, with steamboats?

A. I don't suppose it would average over four months.

Q. How many months in the year can you go up with barges over the falls?

A. Up stream do you mean?

Q. Yes, sir.

A. Whenever there is water up stream at all, we can bring barges up.

Q. You mean you can go up four months in the year?

A. Yes, sir; they cannot tow full tows up; they can break up the tow and double the trip.

Q. Does it often happen that boats go down through the falls and come through the canal back?

A. Yes, sir; they come back through the canal. Our channel over

there is 48 feet wide. Until 1856 it was only 28 feet. They commenced to build their boats larger and wider, and pilots came to the conclusion here that they would go to work themselves and open the channel at the head of the falls at the narrowest place. We went to work on our own hook, and opened it to 48 feet. But Congress afterwards gave the money back. They are now getting to tow so many barges that we find it is not wide enough.

I took Mr. Adams over here the other day and showed him the difficulty. It can be opened, by expending a very small amount of money, to 100 feet, which would allow a great many barges and boats to go over that are now forced into the canal. No one wants to use the time of going into the canal; and, besides, at certain stages of the water there is a good deal of risk in doing so.

By Mr. SHERMAN:

Q. When the water is high?

A. Yes, sir. It could be opened or widened there, and certain reefs blown out on the left of the chute, and could be made a hundred feet wide. It only has to be blasted 12 inches deep. It is not a solid ledge. It is in nigger-heads sticking up. It would add a great deal to the navigation of the falls if that could be done.

Q. Is that the improvement which Captain Adams speaks of?

Captain ADAMS. That was the improvement that I mentioned.

The WITNESS. I took Captain Adams over there to give him an insight as to what ought to be done. It could be done with very little money.

By Mr. SHERMAN:

Q. You mean the enlargement of that chute?

A. Yes, sir; and it would be a very great advantage to steamers and boats towing barges.

Captain ADAMS. By taking out the intervening ledge between two narrow channels, the two could be united, and thereby made one channel of about a hundred feet in width.

Examination of ROBERT H. CAMPBELL.

By the CHAIRMAN:

Question. What is your business?

Answer. I am connected with the Ohio and Mississippi Railway, in charge of their freight department.

Q. What are the termini of that road?

A. Saint Louis and Cincinnati on one side, and Louisville here—a branch.

Q. Please state to the committee the freight charges on that road for fourth-class freight from here to Saint Louis.

A. Thirty-four cents a hundred.

Q. What is the distance?

A. Three hundred and twenty miles.

Q. What does that rate amount to per ton per mile?

A. We take out for that price two transfers, one at Saint Louis and one here. That leaves us net 24 cents a hundred, which would be less than a cent a ton per mile; about seven-eighths of a cent per ton per mile.

Q. That is on all heavy freight?

A. On heavy fourth-class freight.

Q. What do you include as fourth-class freight?

A. That embraces the general classification; the usual classification of that kind.

Q. Ores and grain?

A. No, sir; iron-ores are carried cheaper.

Q. How much do you charge for iron-ores?

A. We usually base our rates on about a cent a ton per mile, where we are making our contracts going East, including the transfers. That would make it a little more in that case.

Q. What difference do you make in your various classifications; what are your classifications, in other words?

A. We have four classifications. We range from 75 down to 34, and as low as 28 on specials.

Q. Your classification is the same as those on the eastern roads, I believe?

A. Yes, sir; the same.

Q. What difference do you make between winter and summer freights?

A. There is very little difference between here and Saint Louis—a very small variation. On freights going East we make a difference.

Q. That is by way of Cincinnati?

A. Yes, sir.

Q. Your charges are the same on the Cincinnati Line and the Saint Louis Line?

A. Yes, sir; our rates of freight East are made up by a joint tariff of the different lines.

Q. How do your freights compare with other railroad lines leading into this city?

A. Freights coming in, do you mean?

Q. Freights either coming in or going out. How do they compare with other railroads centering at this city?

A. For the points we reach, we are holding an equal proportion.

Q. What is the name of the other road running to Saint Louis?

A. The Jeffersonville Road, terminating at Indianapolis.

Q. Their charges are the same?

A. Yes, sir.

Q. Do you know what the charges are on the southern roads leading to New Orleans and into the southern country?

A. I have with me the tariffs of this line. I am not familiar with the rates. I have also the tariffs of the lines from here. I have drawn a comparison there for the months of October, 1871, 1872, and 1873.

By Mr. DAVIS:

Q. How long has your 34-cent rate been in existence?

A. Since the line has been opened; for the last three years. It has been a uniform rate for years.

Q. With no change, winter or summer?

A. Not unless we meet a special competition to cut it down, and then for a few cents only. That is the uniform rate. A variation will sometimes arise in freight contracts.

Q. How many miles out on your road do you go locally before you come up to your through-rate?

A. From Louisville, do you mean?

Q. Yes, sir.

A. We have a local tariff from here reaching all points.

Q. How many miles do you get out before you come up to your through-rate?

A. Our through-rate does not govern our local rate at all.

Q. I understand that, but that is not the question. I ask you how many miles you go on your road before you get up to 34 cents local?

A. On our fourth class?

Q. Yes, sir.

A. I don't think we reach it at all until we get to Saint Louis.

Q. Do I understand you that you haul at the same rate locally as you do through?

A. No, sir.

Q. What is the per cent. difference—the average difference?

A. There is no rule regulating that matter. Each road has its own local tariffs.

Q. I am asking of your road.

A. I say every line has its own tariffs. If I had a comparison of the tariffs I could show you what the difference of the percentage was, taking any specified points you might name on the line.

Q. I do not know your points, or I would specify them.

A. I will obtain that local tariff and give you a comparison. I have not it with me, however.

By the CHAIRMAN:

Q. The statements which you have furnished to the committee are in relation to your own road?

A. No, sir; those are the joint rates made by the different lines from Louisville.

Q. By all the lines?

A. Yes, sir; by all the lines.

Q. I see you have not stated the New Orleans rates here.

A. That was a southern line and I had not the rate. I supposed Mr. Smith would be here, and I did not have it. I also omitted Memphis.

Q. You said something about this rate of 34 cents to Saint Louis including two terminal changes?

A. There is a bridge-toll here of 4 cents, and one at Saint Louis of 6, making 10 altogether.

Q. So that that 34 includes the bridge-charges?

A. Yes, sir.

Q. Do you know what the rates are now from here to New Orleans?

A. No, sir; I am not familiar with the southern tariffs.

Q. How are these joint rates made up?

A. They are made up by a meeting of the different interests which center here.

Q. That has been usual, I suppose, for several years?

A. It has.

Q. Do you know how much these rates vary South, owing to the rise or fall of the water?

A. No, sir; I am not familiar with the rates of transportation from here South.

Q. When these joint rates are made, for how long a time do they usually continue?

A. Until there is a necessity for a change, for some cause or another.

Q. No definite time?

A. No, sir.

Q. Until they meet and agree upon a change?

A. That is it.

Q. Do you prorate with any water-line?

A. Here we connect with none. We do, too; we connect with the

line from Saint Louis—the Northern Transportation Line—the northern line of packets from Saint Louis to Saint Paul.

Q. Do you prorate with them on freights?

A. We have until the last year.

Q. On what terms did you prorate when you were running in that manner?

A. They allowed us 50 per cent. of the earnings between here. They divide it equally to all points above Keokuk, between Keokuk and Saint Paul.

Q. From all points between Keokuk and Saint Paul, do you say?

A. Yes, sir; anywhere above the rapids. Last year we were working upon a tariff issued by them at Saint Louis, allowing them their rate from there.

Q. I do not know that I understand your meaning.

A. They would fix a rate from Saint Louis to those points North, by boat, and we would make our rates from here to correspond; that is, if we wished to have the freight.

Q. You do not know anything about prorating on southern water-lines, do you?

A. No, sir.

By Mr. SHERMAN, (referring to tariff:)

Q. Please state whether that is the last classification of your rates.

A. That is the rate we are working on at the present time.

Q. Is this the last rate of the southern road?

A. I supposed Mr. Smith would be here, and I am not myself familiar at all with those southern roads. That is the last they have published in their office.

Q. Is the classification of articles westward different from the eastward-bound articles?

A. Yes, sir.

Q. This classification (referring to document) governs all classifications from Louisville to points West, Northwest, and North?

A. Yes, sir.

Q. What is your rate to Cincinnati?

A. Ten cents a hundred.

Q. How much per ton per mile?

A. The distance is one hundred and twenty-seven miles, and we take out of that a bridge-transfer of 4 cents.

Q. I do not exactly catch your meaning.

A. The bridge-toll is 3 cents a hundred; that from 10 would leave 7; and the distance is one hundred and twenty-seven miles, so that there would be a fraction over a cent a ton a mile charge.

Q. How does that compare with the water-rate?

A. It is an agreed rate with the lines. It ought to be the same.

Q. Do you prorate with them in any way?

A. We don't; we are a competing line from here there.

By the CHAIRMAN:

Q. How many roads are there from here to Cincinnati?

A. Three—two railroads and one river line.

Q. There is your line and the other short line?

A. Yes, sir; the short line on the one side, and we on the other side.

Q. Are these rates maintained during the low water?

A. We make them uniform during the season.

Q. That is, they correspond with the river at low water. You don't mean to say that your rates are the same throughout the season?

A. Between here and Cincinnati they are. Competition is brought down as low as any one wants it, I reckon.

By Mr. SHERMAN:

Q. How far is it to your main line from here North?

A. Fifty-two miles.

Q. What is the point?

A. North Vernon; it is fifty-two miles from Jeffersonville, and fifty-three miles from here.

By the CHAIRMAN:

Q. Can you state the tonnage of your road between here and Cincinnati?

A. No, sir; I did not obtain those figures. I intended doing so this morning, and failed.

Q. Do you know which carries the heaviest tonnage, the river or the railroads?

A. We have no means of knowing that, sir; each one is running his own department.

By Mr. DAVIS:

Q. Do you know the charge by river from here to Cincinnati to-day?

A. Their rate should be 10 cents a hundred on fourth-class freight.

Q. Why should it be so; have you a combination?

A. That is the agreement. That is the joint tariff issued by the line, and that to which we adhere, and I suppose they do.

Q. You mean, you agree with the water-line?

A. Yes, sir.

By Mr. SHERMAN:

Q. Do you ever have any trouble about ratting, or cutting, so called?

A. Yes, sir; cutting of freights occurs very often. It is only temporary, however.

Q. Then what do you do in case you suspect one of your competing lines of cutting?

A. If we desire the freight, we go in for it, and if we do not want it, we let it pass.

Q. Is that the usual cause of meeting of the agents of the different lines?

A. They call together a meeting pretty soon, if it is followed up.

Q. And then you adjust that matter as you can, or enter into competition?

A. Yes, sir.

Q. What point on this schedule is about the same distance as Cincinnati?

A. Bowling Green would be about as near as it would be by the short line. Their distance is one hundred and thirteen, I think, to Bowling Green; and it is one hundred and ten by the short line to Cincinnati.

Q. What is the general difference per ton per mile between your route to Cincinnati and Saint Louis, and the roads leading South and Southeast?

A. I could not answer that; but I can file one of our local tariffs with you. Their local tariffs will show it if you mean local.

By Mr. DAVIS:

Q. I understood that your local tariff was not here.

A. It is down at my office.

By Mr. SHERMAN:

Q. Nashville is not on this list.

A. Nashville is on one of these tariffs South. There may be some difference going South, but there is not much difference, I think.

Q. We have been informed that rates are higher in the South by railroads.

A. It is the case with some of the southern lines, but not all, I think.

By the CHAIRMAN:

Q. Do you remember the rate to Bowling Green on fourth-class freight?

A. I do not. The freight from Louisville to Nashville is at the rate of 2 cents and 7 mills per ton per mile on fourth-class freight.

From Louisville to—	Fourth class, October, 1873.	Fourth class, October, 1872.	Fourth class, October, 1871.	Miles.
	<i>Per cwt.</i>	<i>Per cwt.</i>	<i>Per cwt.</i>	
New York.....	\$0 55	\$0 67½	\$0 65	1,000
Boston.....	60	72½	70	1,058
Philadelphia.....	50	62½	60	*777
Baltimore.....	45	57½	55	716
Washington City.....	45	65½	60	*721
Buffalo.....	37½	37½	40	556
Cleveland.....	27½	27½	30	373
Toledo.....	27½	27½	30	329
Detroit.....	32½	32½	35	394
Chicago.....	30	30	30	305
Milwaukee.....	40	40	40	393
Cincinnati.....	10	10	10	†127
Pittsburgh.....	32½	32½	35	*423
Evansville.....	25	25	25	238
Cairo.....	45	45	45	374
Saint Louis.....	34	34	34	320
Memphis.....				
Nashville.....	25			
New Orleans.....				

* Via short line.

† Over short line, 108 miles.

The above are rates, all rail, as made jointly by lines East and North from Louisville, Ky., on fourth-class freights, during the month of October, and are a full average of fall and winter rates; say New York, the average for three years shows rate 62½ cents; summer and spring rates to same point will be from 50 to 55 cents per hundred.

Rates for points West and Northwest are uniformly the same. (See tariff attached, marked A.) Tariffs for points east, as issued jointly; also, tariff used by rail lines South, with bridge circular, showing tolls by Louisville Bridge Company, are respectively offered with inclosed.

R. H. CAMPBELL.

LOUISVILLE, KY., October 29, 1873.

Examination of J. J. PORTER.

By Mr. DAVIS:

Question. I believe you were president of the board of trade of this town, formerly.

Answer. I was.

Q. Have you any information which you desire to give to the committee upon the question of transportation by rail or water?

A. No, sir; I have for some time had a decided interest in securing, in some way, cheap transportation for the products of the West to the Atlantic sea-board, and have given that matter some attention. But you gentlemen have already received nearly all the information which

I could give you in that connection from the witnesses who have heretofore been before you.

Q. I believe you were chairman of the committee appointed by the national board of trade to examine and report upon the improvement of the Ohio and James Rivers and Kanawha water-routes, were you not?

A. Yes, sir.

Q. State the result of that examination, and your report.

A. Do you desire to know the constitution of the committee, time, &c., of the meeting, or simply the result?

Q. State the case in your own way.

A. About the 7th October, 1868, the Louisville Board of Trade considered the proposition of the completion of the James River and Kanawha Canal. After calm and deliberate consideration they offered certain resolutions, which will be presented to you by the president of this board, I presume, before you adjourn, and recommended that those resolutions and the principle involved be considered by the national board of trade which assembled in Cincinnati, I think, on the 3d of December following.

At that meeting the question was considered one of so much importance that by a unanimous vote that body determined to postpone its consideration for another year, and appointed a committee, whose names I can give you, if you desire. It consisted of Porter, of Louisville; Stanard, of Saint Louis; Barwell, of New Orleans; Roberts and Tapp, of Memphis; Brown, of Portland, Me.; Converse, of Boston; Hinkin, of New York; Monroe, of Dubuque; Munn, of Chicago; Taylor, of Saint Paul, Minn.; John A. Geno, of Cincinnati; J. Price Wetherill, Philadelphia; Israel M. Parr, of Baltimore; Robert Hughes, of Norfolk; and Charles S. Carrington, of Richmond. This committee assembled at the White Sulphur Springs, W. Va., on the 17th day of August, 1869, and were in session about ten days or two weeks. They examined witnesses in regard to the feasibility of the line, and also in regard to the produce of the West seeking an exit to the sea-board, and also in regard to the heavy manufactures that needed cheap transportation from the sea-board to the interior. After a very laborious session they made a report, which is contained in the pamphlet I have before me, the substance of which is that the water-line of communication between the valley of the Mississippi and the Atlantic sea-board was a necessity for the products of the West, and also for the transportation of the manufactured and imported goods arriving upon the Atlantic sea-board, and destined for the West.

They came also to the conclusion that such a water-line from the mouth of the Kanawha River, up that stream to New River, up New River to the mouth of Greenbrier, and thence to a point near the summit of the Alleghanes, and upon the eastern slope of the Alleghanes, taking Jack's River and James River to Hampton Roads, was certainly the most central, and, as they believed, the most practicable route for such a water-line.

They also, after considering the necessities of the West, and also the necessities of the East to have cheap food brought from the West, concluded that this was a matter of so much importance that the Government could afford to give aid to it, although the political sentiments of part of that committee, and probably a majority of it, had previously been very much opposed to Government assistance in matters of internal improvement.

By Mr. NORWOOD:

Q. You mean that they were democrats?

A. I believe that most of them were. Most of those present were, at all events, and yet they waived that political prejudice in consideration of the overwhelming testimony which was brought before them in support of the importance of this enterprise. I know I went there myself politically prejudiced against the Government having anything to do with internal improvements, and came away satisfied that if there was any work to which it should give anything at all, it was this. Our report embodies these facts, and was delivered to the national board of trade in December, I think, of 1869, and the executive committee of that body, I believe, memorialized Congress upon that subject, or at least were so instructed to do at the meeting in December, 1869. In fact, I know that they did do it.

By Mr. DAVIS:

Q. It was adopted by the board of trade?

A. Yes, sir. The national board of trade had a peculiar rule in regard to the adoption of its measures. "Nothing shall be considered as the action of the board unless it shall receive a vote of two-thirds of the members present." This received more than two-thirds, and was therefore adopted by the board.

Q. Did you make any comparison between the cost of rail and water while you were in session? Did you take that question into consideration?

A. We did; and made a great many tables contained in this report in regard to the difference of cost between rail and water transportation.

Q. What was the conclusion of your comparison between rail and water as to cost?

A. I presume an answer as to the average shown by our tables would be more satisfactory to the committee without any details. We found that very little freight could be carried by rail profitably at less than $1\frac{1}{2}$ cents per ton per mile. We found that it could be carried by water at less than one-third of that amount. There were a great many instances given in the report showing a variation from this, but this is my conclusion from the whole testimony.

Q. Does that include canal or open navigation?

A. I refer to canal.

Q. Applied to canals?

A. Yes, sir; and applicable to a canal which would be free.

Q. Free of tolls, do you mean?

A. Yes, sir.

Q. Did you make a comparison as to canal and open water?

A. I believe we did, but the result of that comparison I do not now remember. I remember we compared the cost of transportation, by such a line, of produce from the various ports upon the Mississippi River, Liverpool via the Mississippi, New Orleans, Gulf of Mexico, and around Florida, as compared with this line, but I was not especially interested in that, as the testimony which came before the committee impressed me with the idea that the rates of insurance through the Gulf of Mexico and around the peninsula of Florida, together with the dangers and difficulties in passing out of the Mississippi River into the Gulf of Mexico, rendered it certain in the minds of the committee that that would not be a competing line to the central water-line when once established.

Q. Did you make any estimates of the general tonnage of the Ohio River?

A. We did, sir; but I do not now remember what it was.

Q. Does your report show it?

A. It does; it will take me some time to find it.

Q. Was that of the general tonnage of the river?

A. The general tonnage of the Ohio River and also of the Mississippi; also of the number of miles of navigable water in the Ohio and Mississippi and their tributaries.

There was a question before this committee yesterday, I believe, in regard to the sales of tobacco in Louisville. I find that the largest sales that have been made here have exceeded 50,000 hogsheads. These hogsheads are not of the size and weight that usually go to market; they are very much larger, and probably average 50 per cent. more. The value of the sales in one year in the city of Louisville was \$11,000,000. All of this sought the Atlantic sea-board for a market, except the amount consumed here in the manufactories. I refer to this because I believe the matter was not fully explained in the testimony before you heretofore.

By Mr. SHERMAN:

Q. Is that tobacco exported to foreign countries, or to our eastern ports?

A. A very large part of it goes abroad.

Q. In leaf?

A. In leaf.

By Mr. NORWOOD:

Q. The committee of which you spoke sat in 1869?

A. Yes, sir, in 1869.

Q. Did that committee consider carefully the relative merits of the other water-lines to the Atlantic coast or to the Gulf of Mexico as an outlet for western produce?

A. Yes, sir.

Q. What line did you consider in connection with the James River and Kanawha, or any other lines?

A. We considered the lines connected with the Tennessee River, through Georgia to the Atlantic coast.

We considered another line through the Tennessee River to a point in Alabama, and thence to Mobile, and we also considered several schemes for the improvement of the delta of the Mississippi.

Q. And you say that you gave the preference over all these lines to the James River and Kanawha?

A. We did. Our attention was also called to the Fox River improvement.

Q. The Wisconsin and Fox River improvement?

A. Yes, sir; but the committee was of the impression that the climatic difficulties up there, resulting in snow and ice, were so great that it would hardly be worth while for us to consider that measure very attentively. We confined ourselves almost entirely, so far as the lines north of this projected center line were concerned, to this. We did consider those southern lines, however.

Q. Does your report show what elements entered into your calculation in arriving at that conclusion?

A. Yes, sir.

Q. Cost of construction?

A. Cost of construction of the canal; cost of construction of the character of boats necessary; time necessary to construct. All these matters were considered by the committee and reported upon, and au-

thorities were generally given for nearly all the facts stated by the committee.

Q. What did you mean by saying awhile ago that those lines would not be competing lines with the James River and Kanawha?

A. I think when I used that connection, sir, it was in regard to the transportation of grain from the West down the Mississippi River through the Gulf of Mexico, around the peninsula of Florida, to Atlantic ports, or even to Atlantic ports in Europe.

Q. Let us understand more definitely. Do you mean that the transportation by the James River and Kanawha would be so much cheaper that freight would not go over either of the other lines, supposing they were constructed or established, or do you mean that the trade which would go over the James River and Kanawha would seek that outlet naturally, and freight from other sections of the Union would go over the other lines?

A. Our conclusion was that the freight from competing points, when the James River and Kanawha Canal was completed, would invariably take the James River and Kanawha Canal as its outlet rather than the Mississippi River.

Q. What do you mean by competing points?

A. For instance we would take Saint Louis as a fair competing point, and also Cairo. We would take a point above that upon the Mississippi River where the produce would only have to be floated to the mouth of the Ohio, requiring no other propelling power, and yet our conclusion was that it would subject itself to propulsion up stream from Cairo, and through this line to Hampton Roads, rather than take the other course.

Q. In other words, then, your conclusion was that freight that was equally accessible to the mouth of the Tennessee, or the Ohio River, would take the Ohio in preference to the Tennessee, going that way, or in preference to going down the Mississippi?

A. There were some gentlemen on our committee who were engaged in the grain-trade, and who stated that they had had some experience in the shipment of grain brought via New Orleans. They were not satisfied in the results. They believed that the climatic difficulties would prevent the shipment in that direction, even if the freight was not less by another route. We became satisfied that the freights would be less by the other route, and, therefore, the other argument was not necessary to convince us of this fact, so far as the competition between the Mississippi and the James River and Kanawha Canal was concerned. But we apprehended that possibly there might be some climatic difficulties in the line up the Tennessee River and thence to Mobile, or through Georgia, as via the Gulf of Mexico. Upon that fact we had great difficulty in getting any information as to whether grain shipped in bulk through that latitude would be injured, because there had been no experiments tried upon that line. But, apprehensive that there might be some such difficulties found, we were inclined to favor the other line.

Q. I understand you, then, that the effect of the climate upon the grain shipped through Georgia did not enter into your calculation at all in getting at the result?

A. It would have done so if we had not concluded that the freight would be cheaper by this route in any event. To make myself perfectly plain in that matter, our conclusion was, that the difference in freight would itself carry the produce over the central water-line when it came in competition with the other; but, if we had not come to that conclusion, we would have been compelled, from the testimony before us, to have

concluded that this was the better line, on account of the climatic difference.

Q. All your reasons are spread out in that report, I understand?

A. I think they are.

Q. Did your committee consider the line from the mouth of the Mississippi by inland water communication to the western coast of Florida, and then across Florida by canal to the Atlantic?

A. No, sir; the committee did not; I have, however, individually considered it.

Q. The committee, however, did not consider that line at all?

A. No, sir; it was not before them.

By Mr. DAVIS:

Q. What was your conclusion as to the time the central water-line would be obstructed by ice?

A. We took the average of several years, and I think our conclusion was an average of thirty days. That was based upon the fact that the canal would reach an altitude where it passed through the tunnel at the summit-level so high that we must expect more cold weather and more obstruction by frost and ice than they had ever experienced before in the lower latitude. We made a calculation for that.

Q. I understood you, you considered the cost and the supply of water and the time, and thought that, all considered, it was altogether practicable?

A. We did think so.

Examination of B. C. LEVI.

By the CHAIRMAN:

Question. Are you engaged in river transportation?

Answer. Yes, sir.

Q. In what way?

A. On steamers.

Q. Between what points?

A. Between here and New Orleans.

Q. What are the usual freight charges on the river between here and New Orleans?

A. On all classes, do you mean?

Q. On different classes, specifying each.

A. Our fourth class, which is the lowest rate, will average, I presume, about \$5 per ton, not more, certainly; but I should judge \$5 the year round.

Q. What is the distance?

A. It is fourteen hundred miles by water.

Q. Do your rates ever run higher than that on fourth-class freight?

A. Very seldom, sir; we may say never when our large steamers are able to ply the water at all. When we lay up our large New Orleans steamers and fall back upon what we term the stern-wheel fleet, they are crabbing around to get what they can, but our regular transportation charges will not average over \$5 a ton.

Q. Are your other classifications similar to the railroad?

A. We do not adhere to them as strictly as the railroads do; we vary from \$5 to about \$7 a ton; \$2 more on lighter class and more valuable freight.

Q. Have you ever had any running arrangements or combinations with the railroads running south?

A. No, sir.

Q. No understanding with them as to prices?

A. No, sir.

Q. What proportion of the year can you run your large steamers, and what proportion your stern-wheel steamers?

A. We run the large steamers nine months, calculating on a season of that time.

Q. What are the three months in which you run the small steamers?

A. In the summer season, when the rivers are naturally low, and the sand-bars high.

Q. Where are those sand-bars interrupting navigation between here and New Orleans?

A. From here to Cairo, principally, and then from Cairo to Memphis, more than the lower portion. The greater obstructions that we encounter are between Memphis and this point.

Q. What is the character of those obstructions—sand-bars?

A. Sand-bars only, sir.

Q. What is the difficulty in the removal, or keeping the river unobstructed?

A. I think it could be very easily done by the use of a dredge-boat. I think it would probably give us eleven months in the year instead of nine, as we now have.

Q. Has the Government spent any money recently in dredging out those bars?

A. No, sir; we have had no dredge-boat on our rivers at any time, that I recollect now, for dredging out channels.

Q. Is there not a point somewhere on the Mississippi called Graveyard Bend?

A. That is on the Upper Mississippi.

Q. Above Cairo?

A. Yes, sir. We fortunately do not encounter it in our trade.

Q. Do you prorate with any railroads?

A. No, sir; excepting with the Texas railroads. We have a line running from New Orleans, called the Morgan Line, through Texas, around coastwise, &c., and we prorate with them.

Q. On what terms do you prorate with them?

A. In fact it is not a prorate. They have arbitrary rates. They send me their rates. I am their appointed agent here, and simply add our rates to theirs. It is not really a prorate at all, but they allow us to make a through rate over their roads, and they respect our through rates.

Q. Do you know anything of the steamboat charges on the Upper Ohio River, above here?

A. Yes, sir.

Q. What do those connecting roads charge per ton per mile in Texas?

A. I do not know, sir; they only give us their rates in round figures between points, and I really do not know the difference in miles from point to point.

Q. State, if you please, what the river rates are above here?

A. Do you mean from here to Pittsburgh?

Q. From here to Cincinnati, and to Pittsburgh.

A. It will not average over twenty-five cents per hundred from here to Pittsburgh—\$5 a ton.

Q. That is about six hundred miles?

A. Seven hundred miles from here to Pittsburgh.

Q. What do you make it to Cincinnati, by river?

A. About \$2 a ton.

Q. On fourth-class freight you include what?

A. Bacon, pork, lard, grain, bagging, &c.

By Mr. DAVIS:

Q. Is your rate the same ascending as descending the Mississippi?

A. It is a little lower up stream than down. I do not think it would average, say, more than \$4 up stream.

Q. That is owing to having less freight?

A. Yes, sir.

Q. Do you know the usual rate by rail from here to New Orleans?

A. It is about \$10.

Q. About double your rate?

A. Fully double.

By Mr. SHERMAN:

Q. The distance is how much?

A. I do not think I know the distance; it is eight hundred miles, I think, however, by rail. It is fourteen hundred miles by water.

By Mr. DAVIS:

Q. Is the insurance paid by yourself, or by the parties owning the goods?

A. By the shipper, or consignee. We do not insure.

Q. What is that?

A. Three-quarters of one per cent.

Q. Is that the year round?

A. They never change.

Q. Do they charge the same insurance on all character of goods?

A. Yes, sir; they only take a fire and water risk, and fire and water alike destroy almost everything.

Q. Do you find much difficulty between here and Cairo, more than you do from there down?

A. O, yes. Sometimes we take a half a trip, as we term it, to Cairo, and go to Cairo to load up.

Q. For the want of water?

A. Yes, sir; for the want of water.

By the CHAIRMAN:

Q. How does the rise and fall of the river affect railroad freights?

A. Not at all, sir, except when the river is so low that we cannot run, and then they raise us higher on freights.

J. M. DUNCAN, president of the board. Mr. Chairman, I desire to present some resolutions passed by the board at Louisville, which read as follows:

Whereas, on the 7th of October, 1868, this board of trade adopted the following resolutions without a dissenting vote:

"Resolved, That cheap transportation for its heavy products to the markets of the world is not only a necessity to the West, but equally demanded by the best interests of the whole country.

"Resolved, That the most feasible plan to secure this end is to provide a direct and continuous line of water communication between the Mississippi River and the Atlantic Ocean, in a latitude favorable to the safe carriage of grain in bulk, and yet comparatively free from obstructions by frost; that such a communication can be readily secured by the Ohio, Kanawha, and James Rivers, through Virginia and West Virginia, to the Atlantic Ocean, near the mouth of the Chesapeake Bay.

"Resolved, That said line of water communication is a work of great national importance, and as such is entitled to receive such aid from the General Government as will secure its completion at the earliest possible period."

And whereas since then the necessity for cheap transportation for heavy products, to and from the West, has materially increased, and engineering and other investigations have more fully demonstrated the feasibility of the central water-line referred to in the above resolutions: Therefore,

Resolved, That this board now reiterates, with increased confidence, the opinion expressed October 7, 1868, favoring the completion of the James River and Kanawha Canal as the most practicable and central water-line.

The above is a correct copy of preamble and resolutions adopted this day by the Louisville Board of Trade.

J. M. DUNCAN,
President Board of Trade.

LOUISVILLE, *October 29, 1873.*

Whereas the necessities of the commerce of the Ohio River demand that the Louisville and Portland Canal shall be made a free channel of transit for all classes of boats, thereby promoting the interests of Louisville as well as of all the cities in the Ohio River Valley: Therefore,

Resolved, That it is the sense of this board that the Government of the United States, having expended a large amount of money for its improvement, and now virtually owning said canal, should take possession of the same and make it free of the present onerous tax on commerce so soon as it can be done without conflicting with the just rights of the bondholders.

Resolved, That we respectfully recommend that the Government of the United States issue its bonds, with coupons attached, to the amount of the mortgage bonds now outstanding on said canal, bearing the same interest and maturing respectively with the canal bonds, and tender them in exchange therefor.

The above is a copy of a preamble and resolutions adopted this day by the Louisville Board of Trade.

J. M. DUNCAN,
President Board of Trade.

LOUISVILLE, *October 29, 1873.*

SAINT LOUIS, Mo., *October 30, 1873.*

The committee met pursuant to adjournment. The Hon. E. O. Stanard read to the committee the following pamphlet:

To Hon. WILLIAM WINDOM,

Chairman of the Senate Committee on Transportation :

Your circular in reference to seventh division, "the Mississippi River route," addressed to the Union Merchants' Exchange, having been referred to the undersigned committee by the Union Merchants' Exchange of Saint Louis, we would most respectfully submit the following, in reply to such inquiries contained therein as are applicable to this locality and accessible to this committee:

Question 1. What have been the average freight charges from Saint Louis to New Orleans for twenty years, and from Saint Paul to Saint Louis for twenty years?

Answer. In answer to the first question propounded by your honorable committee, we submit the following series of tables compiled from trustworthy sources:

Highest and lowest rate of freight charged on grain in sacks and flour per barrel, per river, between Saint Louis and New Orleans, from 1850 to 1860 inclusive—distance, 1,250 miles.

	Grain per bushel.		Flour per barrel.	
	<i>Lowest.</i>	<i>Highest.</i>	<i>Lowest.</i>	<i>Highest.</i>
1850.....	\$0 8	\$0 15	\$0 18	\$0 62½
1851.....	7	17	22½	60
1852.....	5	14	20	50
1853.....	6½	25	20	1 25
1854.....	9	25	25	1 25
1855.....	9	35	15	1 20
1856.....	12½	40	25	1 00
1857.....	10	32½	25	1 00
1858.....	10	20	35	60
1859.....	11½	40	15	90
1860.....	11	45	18	1 00

Average freight charges, and highest and lowest prices on grain in sacks and flour per barrel, from Saint Louis to New Orleans, by steamers, for seven years.

1866.				1867.				1868.				1869.			
Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.	
Wheat.....per bushel.....	\$0 24 3-4	\$0 15	\$0 45	\$0 31	\$0 15	\$0 45		\$0 17	\$0 06	\$0 36		\$0 17 1-10	\$0 12	\$0 24	
Flour.....per barrel.....	75	40	1 50	92 1-5	40	1 50		51	20	1 00		46 1-4	25	75	
Corn.....per bushel.....	23 7-10	14	41 3-10	28 3-4	14	41 3-10		16	05 3-5	33 2-5		16	11 1-5	22 2-5	
Rye.....per bushel.....	23 7-10	14	41 3-10	28 3-4	14	41 3-10		16	05 3-5	33 2-5		16	11 1-5	22 2-5	
Oats.....per bushel.....	13 1-5	08	24	16 1-2	08	24		09	03 1-5	19 1-5		09 1-10	06 2-5	12 4-5	
Bacon.....per 100 pounds.....	41 1-5	25	75	51 1-2	25	75		28 1-5	10	60		28 1-3	20	40	
Hams.....per 100 pounds.....	41 1-5	25	75	51 1-2	25	75		28 1-5	10	60		28 1-2	20	40	
Pork.....per barrel.....	1 14	60	2 00	1 41	60	2 00		86	40	1 75		71	35	1 25	
Beef.....per barrel.....	1 14	60	2 00	1 41	60	2 00		86	40	1 75		71	35	1 25	
Lard.....per 100 pounds.....	41 1-5	25	75	51 1-2	25	75		28 1-5	10	60		28 1-2	20	40	
Hay.....do.....	41 1-5	25	75	51 1-2	25	75		28 1-5	10	60		28 1-2	20	40	
1870.				1871.				1872.							
Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.		Average price.	Lowest price.	Highest price.	
Wheat.....per bushel.....	\$0 22 1-5	\$0 12	\$0 42	\$0 68	\$0 25	\$1 25		\$0 71 1-2	\$0 30	\$1 25		\$0 71 1-2	\$0 30	\$1 25	
Flour.....per barrel.....	64	30	1 25	30	08 2-5	33 3-5		20	09 4-5	36 2-5		20	09 4-5	36 2-5	
Corn.....per bushel.....	20 3-4	11 1-5	33 1-5	20	08 2-5	33 3-5		20	09 4-5	36 2-5		20	09 4-5	36 2-5	
Rye.....per bushel.....	20 3-4	11 1-5	33 1-5	20 3-4	11 1-5	33 1-5		20	08 2-5	33 3-5		20 3-4	09 4-5	36 2-5	
Oats.....per bushel.....	11 3-4	06 2-5	22 2-5	11 3-4	06 2-5	22 2-5		11 1-2	04 4-5	19 1-5		11 1-2	03 3-5	20 4-5	
Bacon.....per 100 pounds.....	37	20	70	36	15	60		36	15	60		36 2-3	17 1-2	65	
Hams.....per 100 pounds.....	37	20	70	36	15	60		36	15	60		36 2-3	17 1-2	65	
Pork.....per barrel.....	1 04	60	1 75	1 06	40	1 90		1 06	40	1 90		1 08	45	1 90	
Beef.....per barrel.....	1 04	60	1 75	1 06	40	1 90		1 06	40	1 90		1 08	45	1 90	
Lard.....per 100 pounds.....	37	20	70	36	15	60		36	15	60		36 2-3	17 1-2	65	
Hay.....per 100 pounds.....	37	20	70	45 1-2	25	75		46	30	75		46	30	75	

Average freight charges from Saint Louis to New Orleans, by the barge line, for seven years.

	1866.		1867.		1868.		1869.		1870.		1871.		1872.	
	High water.	Low water.	High water.	Low water.	High water.	Low water.	High water.	Low water.	High water.	Low water.	High water.	Low water.	High water.	Low water.
Flour.....per barrel.....	\$0 45	\$0 55	\$0 54	\$0 73	\$0 31	\$0 49	\$0 30	\$0 40	\$0 38	\$0 56	\$0 26 1-2	\$0 65	\$0 43	\$0 77
Corn.....per bushel.....	12 2-3	15 2-5	15 1-3	20 1-2	8 7-10	13 3-4	8 2-5	11 1-5	10 3-5	15 7-10	7 1-2	18 1-5	11	21 2-5
Rye.....do.....	19 2-3	15 2-5	15 1-3	20 1-2	8 7-10	13 3-4	8 2-5	11 1-5	10 3-5	15 7-10	7 1-2	18 1-5	11	21 2-5
Oats.....do.....	7 1-5	8 4-5	8 3-5	11 7-10	5	7 4-5	4 4-5	6 2-5	6 1-10	9	4 3-10	10 2-5	6 9-10	12 3-10
Bacon.....per 100 pounds.....	22 1-3	27 1-3	27	36 1-2	15 1-2	24 1-2	15	20	19	28	13 2-5	32 1-2	21 1-2	38 1-2
Ham.....do.....	23 1-3	27 1-3	27	36 1-2	15 1-2	24 1-2	15	20	19	28	13 2-5	32 1-2	21 1-2	38 1-2
Pork.....per barrel.....	67 1-2	82 1-3	81	1 09 1-2	46 1-2	83 1-2	45	60	57	84	40	97 1-2	64	1 15 1-2
Beef.....do.....	67 1-2	82 1-3	81	1 09 1-2	46 1-2	83 1-2	45	60	57	84	40	97 1-2	64	1 15 1-2
Lard.....per 100 pounds.....	22 1-2	27 1-2	27	36 1-2	15 1-2	24 3-8	15	20	19	28	13 2-5	32 1-2	21 1-2	38 1-2
Hay.....do.....	32 1-2	37 1-2	37	46 1-2	25 1-2	34 1-2	25	30	29	38	23 2-5	42 1-2	31 1-2	48 1-2

High-water rates include the months of April, May, June, July, and August. Low-water rates the balance of the year. The year 1873, for the months of January, February, and March, the rate for flour averaged 82 cents per barrel, for April, May, June, and July, 84 cents per barrel.

*Average freight charges from Saint Paul to Saint Louis by steamers for seventeen years—
distance eight hundred miles.*

	1856.	1857.	1858.	1859.	1860.	1861.
Wheat, per bushel.....	18c.	15c.	14c.	15c.	16c.	15c.
Flour, per barrel.....	60c.	50c.	50c.	50c.	52c.	50c.
Barley, per bushel.....	14c.	12c.	11c.	12c.	12c.	12c.
	1862.	1863.	1864.	1865.	1866.	1867.
Wheat, per bushel.....	18c.	19c.	25c.	24c.	23c.	21c.
Flour, per barrel.....	60c.	62c.	75c.	73c.	72c.	70c.
Barley, per bushel.....	14c.	14c.	19c.	19c.	18c.	16c.
	1868.	1869.	1870.	1871.	1872.	
Wheat, per bushel.....	20c.	20c.	18c.	15c.	15c.	....
Flour, per barrel.....	68c.	68c.	60c.	50c.	50c.	....
Barley, per bushel.....	15c.	15c.	15c.	12c.	12c.	....

The years 1861, 1862, 1863, and 1864 were the years of the great civil strife, and during most of that time there was no commerce between this city and New Orleans.

The honorable committee will please note the following features of this answer. The highest and lowest rates of freight charged on corn per bushel by river during the above years were as follows:

	Highest.	Lowest.
1866.....	41 3-10c.	14c.
1867.....	41 3-10c.	14c.
1868.....	32 2-5c.	5 3-5c.
1869.....	22 2-5c.	11 1-5c.
1870.....	39 1-5c.	11 1-5c.
1871.....	33 3-5c.	8 2-5c.
1872.....	36 2-5c.	9 4-5c.

It will be noted that there is a wide difference between the highest rate charged and the lowest. The lowest rate is that which prevails when there are more than eight feet of water on the worst bars, and the highest rate that which is charged when there are less than five feet on the worst bars. If, therefore, the Government will build the wing-dams recommended by this committee, at the worst spots between Saint Louis and Cairo, the localities to be determined hereafter, we believe that ten feet of water may be obtained throughout the year, and the rate of freight be thus reduced to something near the lowest figure above given, namely, 5½ cents for a bushel of corn. As an evidence that the wing-dams or jetties which we ask to be constructed will effectively remedy the evils of which we complain, we may state that General Simpson, as will be seen from his letter accompanying this report, is now engaged, by order of the Government, in constructing such a series of works at Horsetail Bar, twelve miles below Saint Louis, as are here referred to.

It will be noted that during the decade bounded by 1850 and 1860 freight-rates from Saint Louis to New Orleans averaged much lower than they have since. The reason of this was that our steamers, in the comparative absence of rail facilities between the sea-board and the Mississippi Valley, did a large portion of the carrying trade of the West. Goods, passengers, mails, and express matter traversed the rivers of the valley to a much greater extent than they have since done, and therefore steamers were not compelled to make all their money on the freight of the down trip as they now must. But let us represent to this committee that the great bulk of the produce exported from America is produced in the Mississippi Basin, and is carried across half a continent by expensive and artificial thoroughfares, when it might better take the cheaper, natural, and more comprehensive route to the sea afforded by the descent thither of its own navigable waters. We beg the committee also to note that fully three-fourths of the coffee, tea, and miscellaneous merchandise imported into the United States is consumed in the Mississippi Basin, and that those goods are brought by vessels to Boston, New York, Philadelphia, or Baltimore, and thence distributed to the people of this vast basin by expensive artificial routes of carriage instead of coming up the navigable streams of the valley in boats that ascend comparatively cargoeless. In view of these two facts, does it not seem plain that were the Western consumers willing to bring their foreign goods and merchandise by the Gulf and rivers, a sufficient reduction could be made in the price charged for carrying produce from the Mississippi Valley bins to Europe, along this great natural water path, to render this route the most economical one on the face of the globe?

Q. What have been the average number of days in the year for twenty years when there has been less than four feet of water between Saint Louis and Cairo? Less than six? Less than eight? Less than ten? More than ten?

A. The question respecting the number of days in each year for a series of years, in which there was a specified depth of water in the channel of the Mississippi between this point and Cairo, properly concerns only the worst bars between Saint Louis and Cairo. The channel of the river between this city and Cairo is a deep one, but it is crossed by several bars or shoals, and when a steamer loads for a lower port she must do so with sole reference to the amount of water on the worst bar. Sometimes it happens that one single place, or at most, two places on the entire route, will shoal to a depth of five feet; and notwithstanding the fact that along the whole length of the channel, with these exceptions, a depth of eight to twenty feet exists, all steamers bound down stream must load for these shoal spots. With this explanation we present the following table in answer to the query concerning the prevailing depth of the Mississippi channel between this city and Cairo:

River navigation from Saint Louis to New Orleans for nine years, being the depth of water in the channel between Saint Louis and Cairo.

	1864.	1865.	1866.
Days less than 4 feet to Cairo.....	none	none	none
Days over 4 feet and less than 6 do.....	52	40	31
Days over 6 feet and less than 8 do.....	119	82	89
Days over 8 feet and less than 10 do.....	72	40	123
Days of ten feet and over.....	122	203	122
	1867.	1868.	1869.
Days less than 4 feet to Cairo.....	16	none	none
Days over 4 feet and less than 6 do.....	15	62	none
Days over 6 feet and less than 8 do.....	92	90	92
Days over 8 feet and less than 10 do.....	30	53	136
Days of 10 feet and over.....	212	160	137
	1870.	1871.	1872.
Days less than 4 feet to Cairo.....	none	none	15
Days over 4 feet and less than 6 do.....	81	122	67
Days over 6 feet and less than 8 do.....	147	90	131
Days over 8 feet and less than 10 do.....	46	92	30
Days of 10 feet and over.....	91	61	122

By an examination of these figures it will be noted that at no time during 1871 was there so low a stage as four feet reported, yet during that year there was a period of forty-nine days of suspension of navigation between Saint Louis and Cairo. The truth of it is the river never averaged lower for so many weeks together than during the summer, fall, and winter of 1871, and though there was always a little more than 5 feet on the worst places to Cairo, yet there was not water enough for either barges or boats to run. Most of the boats in the lower river trade draw $4\frac{1}{2}$ to 5 feet light, and a depth of less than $5\frac{1}{2}$ feet practically lays them up. As elsewhere stated, a few inexpensive wing-dams would obviate this difficulty, and secure, during the lowest stage, fully 10 feet of water between Saint Louis and New Orleans, upon which depth paying loads can be taken by any of the boats or barges in the trade, and uniform minimum rates of freight may be established for the entire year, subject only to the rebates and "cuttings" induced by a sharp competition.

Q. 3. What have been the number of days in each year during which navigation between Saint Louis and New Orleans has been suspended on account of ice or low water?

A. In reference to the number of days during which there has been a total suspension of navigation between this port and New Orleans for a series of years past, we find the following to be the facts: In 1859, there was 12 days; in 1860, 14 days; in 1861, 7 days; in 1862, 14 days; in 1863, 12 days; in 1864, 38 days; in 1865, 16 days; in 1866, 17 days; in 1867, 7 days; in 1868, 31 days; in 1869, 7 days; in 1870, 10 days; in 1871, 49 days; and in 1872, 25 days. It will be observed that there is great irregularity in the periods of suspension of navigation, the longest period being 49 days, and the shortest 7 days. This is explained as follows: Between this city and Cairo there are five or six places in the river where, from the great breadth it attains and the flatness of the country over which it flows, the current is so weakened as to permit a rapid precipitation of the sediment its waters contain, and sand-bars and shallow spots are the result. During 1871 the water became quite low in the river, and for weeks these places were impassable, and during the succeeding winter the ice which floated from above Saint Louis would continually lodge upon these bars and shoals, and so gorge the river as to make it unnavigable. These two causes combined produced the unusual suspension of navigation noted in 1864, 1868, 1871, and 1872. The remedy for this is simple, cheap, and effective. It is the construction on the part of the Government of wing-dams on these few bad spots, which will so narrow the channel as to cut away

the bars and insure a good depth of water to Cairo throughout the entire year, even in the driest seasons, for upon either side of these bars, at the lowest stage of the river, the water is at least 10 feet deep. There are several parties in this city and elsewhere who have made estimates upon the cost of constructing the required dams. The lowest of such estimates has been \$20,000, and the highest \$30,000 each. Therefore, the honorable committee will observe that for a trifling expense the period of suspended navigation of the Mississippi River, between the cities of Saint Louis and New Orleans, can be reduced to an annual average of ten or twelve days.

Q. 4. What are the advantages gained by the transportation of grain in bulk over grain in sacks?

A. Succinctly stated, the advantages gained in transporting grain in bulk over grain in sacks are, first, a saving of the sack, which amounts to about 5 cents per bushel on the grain; second, a saving in handling, which will amount, in course of the two or three transshipments which occur between the producer's point of shipment and the consumer's point of reception, to fully 5 cents per bushel more, or 10 cents per bushel altogether. From 1865 to 1872 shipments of corn and oats from this city by the river alone, in bags and bulk, have been as follows:

Years.	CORN.		OATS.	
	Sacks.	Bulk.	Sacks.	Bulk.
1865	443, 686	-----	339, 826	34, 800
1866	2, 954, 203	66, 070	645, 523	200
1867	1, 843, 459	23, 000	535, 651	-----
1868	570, 657	125, 026	462, 815	416, 436
1869	446, 880	86, 648	412, 917	13, 408
1870	1, 209, 460	-----	120, 405	-----
1871	836, 049	309, 077	456, 027	-----
1872	921, 658	1, 711, 039	564, 625	3, 000
Total	9, 226, 052	2, 320, 860	4, 067, 789	467, 844

The greater part of this sacked grain has been consumed by the people of the South. Its sum total amounts to 13,294,837 sacks, or, at the least estimate, 45,000,000 bushels. The saving, then, on the grain thus consumed during the eight years mentioned would have been not less than \$4,500,000.

Q. 5. Are there any disadvantages of a climatic nature involved in the transportation of grain from Saint Louis to European ports via the river and Gulf?

A. To the inquiry of the committee in reference to the climatic disadvantages of the Gulf route, we reply there are none. In proof of this we submit the following account of sales of northern spring wheat shipped in sailing vessels, in bulk, by the Saint Louis Grain Association to Liverpool during the summer of 1869, and call attention to the amount in each cargo returned as damaged: The cargo of the ship Essex consisted of 14,611 bushels; 30 bushels returned as damaged; cargo sold by Budgett & James, Bristol, England. The cargo of the ship Industrie consisted of 27,596 bushels; not a pound returned as damaged; cargo sold by Budgett & James, Bristol, England. The cargo of the ship Ocean Phantom consisted of 32,101 $\frac{1}{2}$ bushels; 4 bushels returned as damaged; cargo sold by Budgett & James, of Bristol, England. The cargo of the ship Johannes consisted of 23,752 bushels; not a pound returned as damaged; cargo sold by Budgett & James, of Bristol, England. The cargo of the ship Emma F. Secor consisted of 25,757 bushels, 105 pounds of which were returned as damaged; cargosold by Patterson Bros. & Co., Liverpool. The cargo of the ship Mary Jones consisted of 13,196 bushels; returned as damaged, 46 bushels and 17 pounds; cargo sold by Patterson Bros. & Co., of Liverpool. The cargo of the ship Roseneath consisted of 22,170 bushels; returned as damaged, 39 bushels; cargo sold by Patterson Bros. & Co., of Liverpool, England. We presume it is sufficient for your honorable committee to know that the above statements were accurately copied from the original account of sales rendered to the Saint Louis Grain Association of this city. We have selected the cargoes of sailing-vessels because, if any damage can come to grain from climatic disadvantages, that shipped by sail is most in danger. The above cargoes were all wheat. Shipment of them was begun in March, 1869, and one to two cargoes per month were sent forward throughout the summer. One of the above cargoes was becalmed in the Gulf, and lay under a burning sun for days together. The calm was succeeded by a

storm, which drove the vessel far out of its course, and when it finally arrived in Liverpool it had been ninety days out. Yet the wheat was found to be in just as good condition as any of the fresh receipts of the same grade of wheat daily arriving from New York. There is still another fact which may especially interest this committee, and that is that the cargoes sent in these ships were found to grade higher than those which had passed via the northern routes, and invariably outsold such wheat by seven to nine pence per hundred pounds—about 10 cents of our money per bushel.

Corn exported in bulk from New Orleans to England during 1873.

We beg leave to present the following list of cargoes of corn that have been exported via the Gulf to England during the present season, every one of which has arrived sound and has sold at the top figures of the market:

Date.	Name of vessel.	Cargo—Corn.
1873.		<i>Bushels.</i>
February 11.....	Steamship Cheviot.....	15,000
February 13.....	Steamship Louisiana.....	19,000
March 3.....	Steamship Mississippi.....	12,000
March 31.....	Steamship Saint Louis.....	26,000
April 3.....	Brig George Gilchrist.....	15,000
April 8.....	Brig Royal Haven.....	22,000
April 11.....	Steamship Minnesota.....	18,000
April 23.....	Steamship Memphis.....	50,000
April 23.....	Brig Pekin.....	24,000
May 9.....	Steamship Alabama.....	29,000
May 17.....	Steamship Louisiana.....	25,000
June 6.....	Steamship Saint Louis.....	16,000
June 19.....	Steamship Mississippi.....	19,000
June 30.....	Steamship Concordia.....	19,000
July 2.....	Steamship Minnesota.....	35,000
August 8.....	Steamship Oberon.....	26,000
August 26.....	Steamship Saint Louis.....	22,000

Accounts of sales of each of the above cargoes have been received by mail, with the exception of the last one, and the condition of the corn on arrival at its destination has been just as good as any that has been shipped from New York or from any other point of the world to Liverpool.

The steamer Memphis lay on the bar and in the river 43 days, and returned to New Orleans and discharged cargo, repaired, and retook cargo, which arrived in good condition.

Q. 6. What are the rates of insurance on grain by the river and Gulf route?

A. Respecting the rate of insurance on grain by the river and Gulf route, we would state that from Saint Louis to New Orleans the rate by boat and barges is 1 per cent. From Saint Louis to Liverpool via the Gulf it is 3½. From Saint Louis to New York via the Gulf is 2½. In reference to these rates, let us observe that the rate from this city to New Orleans is much too high when applied to barge transportation, and would be reduced to ½ per cent. provided the obstructions were removed. The charge of 3½ now levied upon goods shipped from this port to Liverpool via the Gulf is also much too high, and one of the reasons for so large a rate is the extra hazard of crossing the bar at the mouth of the Mississippi River. If the Government will construct the Fort Saint Philip Canal, below New Orleans, this rate will be very materially reduced, and added to the reduction in insurance will be a reduction in the rate of freight from New Orleans to Liverpool, induced by the cheapening of port expenses, which the construction of the Fort Saint Philip Canal, or some similar improvement, will bring about.

Q. 7. What is the number of tons of freight transported each year from Saint Louis to New Orleans, and from New Orleans to Saint Louis?

A. The number of tons transported to New Orleans from this city by river, in 1871, was 295,708. The number in 1872 was 322,813, showing a notable increase, when the fact that 1872 was a dry year is considered. It will be remembered that a period of forty-nine days of suspended navigation occurred in 1872 from ice and low water. The number of tons of freight transported by river from New Orleans to Saint Louis, in 1871, was 150,000, and 200,000 in 1872.

IMPORTANCE OF THE FORT SAINT PHILIP CANAL.

It is urged by those opposed to the Mississippi River and Gulf route that there is no need for the construction of the Fort Saint Philip Canal, the depth of water on the bar being sufficient for the class of vessels needed for the commerce of New Orleans. We protest against this idea upon the ground that New Orleans is a sea-port, and all sea-ports should have such a depth of water guaranteed to them as will admit of the approach of any of the commercial vessels of the world. Railways require to be of uniform gauge to be useful, and sea-ports should have channels of approach of something near a uniform depth. This requires a depth of not less than 28 feet, and no system of dredging can assure that depth upon the bar at the mouths of the Mississippi during all seasons of the year; therefore the Government should construct the Fort Saint Philip Canal; and it is the opinion of your committee that, by use of the improved methods for excavation, this canal may be built at a cost not exceeding \$6,000,000, and, if performed by contract—let to the lowest responsible bidder—it may not cost that sum.

OBSTRUCTIONS.

The obstructions to the navigation of the Mississippi River, which, in the opinion of your committee, prevent the cheap transportation of the heavy product of the Mississippi Valley, from the head-waters of the Mississippi River to its mouth on the sea-board, are chiefly the Rock Island and Des Moines Rapids, the shoal places and bars at various points—not exceeding, perhaps, at ten or twelve places—the sunken wrecks and snags, and the bar at the mouth of the river. The widening of the channel at Rock Island, the completion of the canal at Des Moines, the construction of the wing-dams heretofore alluded to, the removal of the wrecks and snags, and the construction of the Fort Saint Philip Canal would, we believe, result in the utilizing of this great water-course, so as to afford uniform and sufficient depth of channel for steamers and barges from Saint Paul to New Orleans, and reduce the cost of transportation of the products of this entire section to a uniform cost not exceeding the lowest average, as shown by the tables of freights accompanying this report. In the opinion of this committee, the removal of wrecks and snags between Saint Louis and New Orleans is of vital importance to the commerce of the river. Wrecks between Saint Louis and Cairo, sunken many years ago and mostly forgotten, are so numerous that, from the extra hazard they present, our rate of insurance is not only increased upon boat-hulls and cargoes, but steamers with thin hulls and light draught are refused insurance at any rate. It is necessary, therefore, to construct much stronger and more expensive hulls, and necessarily of deeper draught than would be acceptable to underwriters were these wrecks and snags removed between Saint Louis and New Orleans, thus increasing very materially the cost of transportation. This committee, therefore, recommend that the river be districted, and sufficient snag-boats be commissioned for each district to effectively remedy this difficulty, and to remove from the banks in their districts such trees and logs as are liable to become obstructions to navigation.

WHAT MAY BE ACCOMPLISHED.

We would call the attention of your honorable committee to the cheapest form of water transportation yet devised, namely, the carriage of freight in barges towed by steamers especially adapted to that business. By means of barges commerce can be effectively carried on in rivers of less depth than would be sufficient to float a steam-boat large enough to pay her expenses as a freighter, for freight enough to load a large steamer can be distributed in several barges and towed by one tow-boat, carrying nothing but her machinery and fuel. Thus, upon comparatively shallow rivers, such as the Illinois, the Ohio, the Upper Mississippi, and the Missouri, fleets of barges may be used with profit to the company owning them and benefit to shippers. But in order that tows of barges may be successfully handled, the Government must remove all obstructions to navigation. By doing this beneficent work all of the people of the country will be benefited—the producer in being able to ship his products for a low price, and the consumer in being enabled to obtain his bread at a cheaper rate. The introduction of barges on the Mississippi, from this port to New Orleans, reduced the average freight rate at once, as will be seen by reference to the tables of averages submitted. Thus, in 1866, the average on corn to New Orleans was 23½ cents per bushel. In 1867 it was 28½ cents. In 1868, the year the barges came into full operation, the average dropped to 16 cents, and the lowest rate attained was 5½ cents per bushel. The committee will remember that the cost of transportation by river is controlled by the depth of water. The quantity of fuel used being the same for a given time, and the wages of hands employed, the cost, whether by steamer or barge, depends upon the quantity of freight which can be loaded upon a single vessel; and with nine feet fifteen hundred tons can be taken, while with six feet barely six hundred tons can be loaded,

thus increasing the cost per bushel 150 per cent. Again, the time required for a trip down with barges increases from five days at high water to ten days at low water, for the reason that pilots do not venture to run at night, and the cost of transportation is thus again increased. We believe that when the depth of water in the river can be increased to over nine or ten feet at all stages and all points, the average cost for ten months in the year will be even less than the minimum of 5½ cents heretofore obtained.

The benefit of these improvements to the people of the Mississippi Valley and the consumers of their products will not be confined to the cheaper cost of transporting the quantity which may actually be moved by the river route. Your committee has doubtless learned that the rates of freight from Chicago eastward by rail are now restrained to low figures during the summer only by the competition offered by the lake and canal route. From records of the Chicago Board of Trade it appears that the lowest rate by rail last year, namely, 45 cents per 100 pounds, was maintained for only twenty days, and a rate as low as 50 cents for only 123 days. As soon as the lake route opened the rates by rail dropped, and as soon as the quantity of grain to be moved from lake points exceeded the available tonnage for moving it before the close of navigation, the rates by rail were at once raised again. Thus for fully two-thirds of the year the cost of moving grain from the Mississippi River to the sea-board is unrestrained by competition, and we urge the committee to consider that the improvement of the river, affording means for moving grain at cheaper rates, will secure that competition for nine months in the year for all points below Dubuque, for more than ten months for all points below the mouth of the Missouri, and for the whole year from Cairo. Thus the rates at which grain may be moved eastward by rail will be reduced, not as now for four months only, but for nine or ten months, and a great and permanent benefit be thus secured to all the producers of the Northwest.

We desire only additional facilities for transportation. The surplus products of the Northwest now far exceed the capacity of the lake and canal route, and crowd the railroads in the fall and winter so greatly as to cause excessive rates, and to derange the movement of all other freights. Making no war upon the railroads, desiring by no means to deprive the lake and canal route of any share of the products of the Northwest which it can move to the consumer, we nevertheless believe that the necessities of producer and consumer alike demand additional facilities for transportation, and that competition extending through the whole year by which alone lower rates may be permanently secured.

THE YEARLY SAVING TO BE EFFECTED.

Let us call the attention of your honorable committee to the following facts. The following table* exhibits some of the leading articles produced in States bordering upon the navigable rivers of the Mississippi Valley:

	Wheat.	Corn.	Oats.	Rye and barley.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Illinois.....	30, 128, 405	129, 921, 395	42, 780, 851	4, 936, 978
Indiana.....	27, 747, 222	51, 094, 538	8, 590, 409	813, 730
Iowa.....	29, 435, 602	68, 935, 065	21, 005, 142	2, 556, 586
Kansas.....	3, 391, 198	17, 025, 525	4, 097, 925	183, 612
Minnesota.....	18, 866, 073	4, 743, 117	10, 678, 261	1, 110, 112
Missouri.....	14, 315, 926	66, 034, 075	16, 573, 313	823, 781
Ohio.....	27, 882, 159	67, 501, 144	25, 347, 549	2, 562, 111
Wisconsin.....	25, 606, 444	15, 033, 998	20, 180, 016	2, 970, 313
Total.....	177, 373, 119	420, 288, 527	149, 208, 536	15, 947, 223
Grand total.....				762, 617, 405 bushels.

At least one-third of this grain is moved from the point of production to the Eastern States, over expensive artificial routes, losing to the producer 10 cents per bushel, and to the consumer 10 cents per bushel, which might be saved by transportation down the natural water-paths of the valley and around the sea-coast. The sea-board ports received in 1873 a trifle over 100,000,000 bushels of grain, and 8,000,000 barrels of flour. Here is 140,000,000 bushels of grain represented altogether. This grain paid a freight of 20 cents per bushel more than need be paid, provided the Government will properly remove the navigable waters of the Mississippi Basin, making \$28,000,000, which might have been saved, \$14,000,000 to the consumer, and \$14,000,000 to the producer. This saving, it is estimated, can be made upon the 140,000,000 bushels of breadstuffs which proceed eastward over the costly and artificial routes now employed, and no estimate,

* From the ninth Government census, 1870.

is made on the live stock, provisions, hay, dairy products, fruit, &c., which the Eastern States annually draw from this valley; nor upon the tobacco, cotton, &c., which are annually shipped from here eastward, to be thence exported, instead of proceeding to New Orleans and taking ship there.

AN OPEN WATER-ROUTE THE WHOLE YEAR.

We have endeavored to show to your honorable committee that the navigable rivers which drain the Mississippi Basin are best fitted for the cheap carriage of its products to the markets of the world. But owing to "climatic difficulties," over which we have no control, the rivers lying north of Saint Louis are closed by ice during certain months of the winter. It would be impossible to move the products of the valley to this city by water during the months referred to. But by rail these products may come to our warehouses, and from here be passed on by water during the entire winter. During the few days of suspended navigation at this point in winter, if there is great need of haste in moving any products forward, a cheap outlet is furnished from here via rail to Belmont or to Cairo, thence by barge by river. This is the only water-route over which shipments of produce can be moved to the sea-board during the winter season. Eighteen railways terminate at Saint Louis. With their branches and connections they are enabled to bring us the products of the entire Northwest, West, and Southwest at a rate of freight per mile no greater than is charged by railways leading to other shipping points. We therefore earnestly urge, in behalf of producers and consumers both, that if the products of the Mississippi Valley are moved in winter from points of production to any shipping city they must go by rail, and Saint Louis is the only shipping city to which they can come and be forwarded by a cheap water-route during winter. We urge, moreover, that a very large part of the products of Nebraska, Kansas, Missouri, Iowa, Illinois, Minnesota, and Wisconsin may come to this city during the summer by water, and proceed to their destination by water, either to European ports, the Atlantic coast, Cuba, Mexico, South America, or any other part of the world. But none of the products of these States, with the exception of a narrow strip of Illinois, can proceed to any of the lake cities by water, and the cost of transporting these products from the farms to the lakes by rail is ordinarily larger than the whole cost should be, with improvements in the river, from the same farms to the ocean at New Orleans. Let these improvements be speedily effected, and the consumers of the Eastern States and of Europe, learning that they can obtain their grain at lower rates by way of New Orleans, will at once provide suitable vessels for moving it from that city, and whatever steamers and barges may be needed to move the surplus of the Northwestern States by the river will be quickly supplied. Then, in the days not far distant, when the population of the States of the Mississippi Valley shall exceed one hundred millions, and when their surplus products shall exceed twenty millions of tons yearly, while all other routes will be fully employed, the broad river, the natural and free highway from the interior to the sea, restraining all by its constant competition, and offering cheap transportation for quantities absolutely unlimited, will confer upon the producers of the Northwest, and the consumers of all other sections, benefits which no human mind can estimate.

Thanking your honorable committee for your attention, we herewith submit this our report, hoping it may be productive of the beneficent results we have so long striven to bring about.

E. O. STANARD, *Chairman.*
 ERASTUS WELLS,
 WM. H. STONE,
 LEWIS V. BOGY,
 R. P. TANSEY,
 WEB. M. SAMUEL,
 GEORGE BAIN,
 HENRY C. HAARSTICK,
 ISAAC M. MASON,
 MYRON COLONEY,
 GEO. H. MORGAN, *Committee.*

APPENDIX.

ENGINEER OFFICE, UNITED STATES ARMY,
 1122 Pine street, Saint Louis, Mo., October 29, 1873.

SIR: Agreeable to promise made to you and the Hon. W. H. Stone, yesterday, I respectfully submit my views in relation to the proposed improvement of the Mississippi River, between the mouth of the Missouri and the mouth of the Ohio Rivers. I shall confine myself to this section of the river, as this is the only portion under my charge.

The works in progress and contemplated are of two distinct classes: 1st. Contraction of the water-way, and 2d, the protection of caving banks; and in my judgment these two classes will include nearly all the works that may be required for the complete improvement of the river.

Works of the second class do not directly and immediately improve the navigation by removing bars or obstructions, but are nevertheless essential to the maintenance of such an improved navigation.

Any permanent improvement depends upon the preservation of the conditions existing at the time the works are designed, and a change of the conditions will render the works useless or positively injurious. Therefore conservative works of this class will always be required above and below the sites of works of the first class.

It may appear at first that to classify all works for the actual improvement of navigation under the single head of "contraction of the water-way" is arbitrary and insufficient; but I am speaking of the permanent improvement of the Mississippi, and while admitting that there may, and probably will, be found instances where work of a different character may be required, I leave them out of the present discussion, because their occurrence is uncertain, their permanence not to be expected, or their character exceptional; as, for example, a bar of sand or gravel deposited from a tributary, the removal of which cannot be expected to be permanent; or the existence of rock, which is exceptional to the general character of the river.

The general principle that may be laid down for the improvement of the Mississippi is, "to collect all the waters into a single channel of moderate width." If this is done I have no hesitation in saying that instead of the ruling depth of from four to five feet now existing at low-water, a depth of ten feet can be maintained as a minimum at all stages below the mouth of the Missouri, because that depth of channel is now found wherever the river has a width of water-way less than 2,500 feet at low water.

In saying that this is the cardinal principle for the improvement of the river permanently, I do not wish to be understood as saying that the navigation can be improved in no other way, but that this is the best for the Government to pursue, because it is the only certain and lasting way.

While permanent works are in progress, which of necessity must be slow, the use of temporary expedients at various points is not only proper, but desirable.

The system proposed is, then, in general terms, to contract the width where it is excessive, to close island chutes, and to protect caving bends and exposed points. To carry out this system fully will require both time and money—how much it is impossible to estimate with certainty. The problem is enunciated only; its arithmetical answer is not now in reach, and this generation must be content with knowing only the first terms of the series. When complete, a navigation whose capabilities can no more be computed than the cost now will be assured, and also the final solution of the question of protection against overflow. As the Mississippi will then be comparatively a clear stream, flowing in a permanent bed, with banks relatively much higher than now, as the scour being confined, the bed of the stream will be permanently lowered.

Passing from this general view of the work to be undertaken, it remains to set forth the initiatory steps and their immediate results.

For the present we must confine our efforts to the control of the low-water river for the improvement of its navigation, restricting works to the minimum compatible with the prevention of radical changes where such would be injurious. It is proposed to design all works with an eye to their forming a foundation for the complete improvement, but to select the localities and adopt an order of execution in the interest of immediate relief to the obstructed navigation.

There is usually a small number of bars (three or four) which come prominently into view as obstructions each year, and determine the controlling depths. If these are improved, the relief is apparent, and it is safe to say that each of these places cost the navigation yearly, in direct loss from delays and injuries to boats, nearly, if not quite as much, as would cover the expense of the local works required for their permanent improvement.

The prominent bars of this year are the ones selected for the operations of the coming season, if Congress makes the appropriations asked for—\$600,000. This amount expended next year will afford practical results the year following, the action of dikes and jetties not being immediate. Frequently the work of the first season must be limited to securing the removal and redistribution of extensive sand-bars, which being in mid-river render the sites of proposed works inaccessible, (of which we have an example at Horsetail Bar;) in such cases the progress made must necessarily be slow, as we proceed cautiously and wait for natural forces to act.

The work now in progress at Horsetail Bar is intended not only to remove the present bar and establish the channel under conditions that will prevent its recurrence at the same locality, but also to meet the arbitrary conditions imposed by its proximity to the city of Saint Louis, with the certainty that at no distant day the locality will be occupied by interests requiring wharf facilities; for these reasons the work to be done is more elaborate and expensive than will be required elsewhere. The work here and

at Venice is of the first class named; that at Sawyer Bend is an example of the second class.

There are upon the list in this office twenty-two shoals between Saint Louis and the mouth of the Ohio River, of which ten are noted as having been at various dates serious obstructions, the depth of water at the lowest stage of the river over these bars being as little as four feet, though the bad bars of any one year are fewer in number, as has been stated before. The bad bars act as dams and pond back the water over those above; therefore as the worst bars are improved, we must expect others to come into prominence, and thus in succession until the whole section of river has been improved; whence an argument for regular and liberal appropriations and a systematic prosecution of all work as parts of a complete plan is so palpable that it does not seem necessary to enlarge.

In conclusion, I will state that a survey of the river from Saint Louis to Cairo, with a view to its permanent improvement, has been in progress during the present season, and at this date has reached a point within about forty-five miles of the latter place. Already a rough estimate of my predecessor, on a previous imperfect survey, has made the probable cost of improving the river between the mouth of the Missouri and the mouth of the Ohio Rivers \$2,996,000, and until a more thorough estimate can be made, based on the more complete survey now in progress, we must content ourselves with this approximation.

It may be proper, however, to observe that, while we will be enabled to arrive at a tolerably close estimate of the cost of improving the river, based on the thorough survey now in progress, yet that the works already under prosecution, and those yet to be designed, will, of course, necessarily modify this estimate, in proportion as new obstructions may be developed by those works, thus increasing the cost, or, as present obstructions may disappear on account of effective works at other points, thus decreasing the cost.

I am, sir, very respectfully, your obedient servant,

J. H. SIMPSON,
Col. of Engineers, U. S. A.

Hon. E. O. STANARD,
Chairman of local committee on transportation, &c.

I. N. MASON, general freight agent of the Keokuk Northern Line Packet Company.

By the CHAIRMAN:

Question. Please state to the committee what you find to be the chief obstructions to the navigation of the Mississippi River, between here and Saint Paul.

Answer. The chief obstructions are the two rapids known as the Des Moines Rapids and the Rock Island Rapids, on the Upper Mississippi.

By Mr. CONKLING:

Q. What do you call the rapids at Jefferson?

A. The first rapids is called the Des Moines Rapids.

Q. Where is that?

A. It is two hundred and twelve miles above Saint Louis, commencing at Keokuk.

Q. And what do you call the other?

A. The Rock Island Rapids, three hundred and fifty-four miles from Saint Louis, extending eighteen miles up the river.

By the CHAIRMAN:

Q. Are you able to bring full cargoes during the entire season of navigation when the river is open?

A. We are not.

Q. For what length of time, probably, on the average, are you able to bring full cargoes?

A. The seasons run for full cargoes to the middle of July.

Q. Up to the middle of July?

A. About the middle of July. With the exception of the lower rapids probably until the middle of June.

Q. What is the draught of your boats?

A. The average draught is about 28 to 30 inches.

Q. What is a full cargo?

A. Packets vary from 450 to 750 tons.

Q. During the season of low water what cargoes are you enabled to bring?

A. We bring a full cargo, but have to do it on barges. Each boat takes two barges.

Q. Does that materially increase the expense?

A. It increases the expense fully 25 per cent.

Q. What is the lowest depth of water between here and Saint Paul at low water?

A. The lowest depth is on the upper end of the river, on Beef Slough and Pig's Eye. In extreme low water it gets as low as 30 inches in the channel.

Q. Have any improvements been made on those bars recently?

A. They have been made for the past three years, especially the past summer.

Q. What is the system of improvement; is it dredging?

A. Dredging. At Beef Slough bar they closed the head of the slough on the east side of the river, and by that they increased the volume of water in the main channel, and it has a tendency when the water is increased to scour out the sands and deepen the channel.

Q. Has it been materially improved by those works?

A. Very much. The company that I have been connected with has been very largely benefitted by the improvement of last year.

Q. Do you run in competition with the rail over any part of your route?

A. We do.

Q. How much?

A. From Dubuque to Saint Paul we are in close competition. The railroad extends all along the river.

Q. Have you any agreement with the railroads as to prices?

A. We have not any.

Q. Have you ever had any?

A. On the river routes do you mean?

Q. Yes, sir; on the competing parts of the line.

A. We have not any.

Q. You never had any agreement with them, have you?

A. Not in the way of rates. Their rates govern our rates to a certain extent.

Q. Do you prorate with any railroads on your line?

A. Only in going east from La Crosse, Prairie du Chien, Dunleith, and Fulton City.

Q. What are the terms upon which you do prorate?

A. The term is one-third to two-thirds with some of them, and with one road two-fifths and three-fifths, from river points to Chicago and Milwaukee.

Q. I do not understand that. Who gets the one-fifth and who the two-fifths?

A. The river route gets one-fifth and the rail two-fifths.

Q. From what point to what point?

A. From La Crosse to Milwaukee. That is low.

Q. You bring from Saint Paul to La Crosse for one-fifth, and they—

A. One-third and two-thirds, I should say.

Q. You bring them from Saint Paul to La Crosse for one-third?

A. Yes, sir; and the rail gets two-thirds.

Q. What is the distance you carry, and what is the distance they carry?

A. The distance they carry is about thirty-five miles farther than by river.

Q. Now as to the other points which you gave?

A. From Dunleith we get two-fifths and the railroad three-fifths.

Q. How do those distances compare?

A. The distance from Saint Paul to Dunleith is three hundred and forty-five miles, and the distance from there to Chicago is two hundred and twenty five miles.

Q. You prorate with no other roads but those, as I understand you. Do you prorate from Clinton?

A. Not from Clinton. The past year we have been enabled to make arrangements from Fulton, just opposite Clinton. That road is connected with a line that they do all their business there with. It is known as the Diamond Joe Line.

Q. Do you know how they prorate?

A. I do not know the exact rate. My opinion is, the same as we prorate at Dunleith with the Illinois Central; that is, two-fifths and three-fifths.

Q. What are your present charges from Saint Paul here per ton or per bushel?

A. At the present time the charge is \$7 per ton or 21 cents per bushel.

Q. They are the same rates from Saint Paul here that they are from Saint Paul to Chicago, are they not?

A. Yes, sir.

Q. Those rates regulate each other somewhat?

A. Yes, sir; we are governed in our rates to a certain extent by the rail rates.

Q. How does that come? Usually the rail is governed by the water rates, is it not?

A. In our case, on the upper end of the river, on rail rates, since the railroad has been extended through from Prairie du Chien to Saint Paul, and also from La Crosse, the river rates and the rail rates have been made almost equal.

Q. Is that made so by an agreement among the companies?

A. No, sir.

Q. You are not connected with any southern line of transportation, are you?

A. Not any.

By Mr. SHERMAN:

Q. You say the rate from Saint Paul to Chicago and to Saint Louis is the same?

A. About the same.

Q. How is it from Burlington?

A. It is less.

Q. Less to Saint Louis than to Chicago?

A. A trifle less. One moment—I will explain. At the present time I suppose our rates are about the same as Chicago rates—25 cents a hundred from Burlington here, or 15 cents a bushel. In high water the river rate is nearly 50 per cent. lower than rail rate. In high water we bring grain—wheat, corn, oats, and rye—at from 6 to 7 cents a bushel.

Q. How is it from Dubuque? Is there any difference between the

rates from Dubuque to Chicago and from Dubuque to Saint Louis, and, if so, is it in favor of the river, or how, on the average?

A. The average is in favor of the river. In high water the rates from Dubuque here would be from 8 to 9 cents per bushel.

Q. How much by rail to Chicago from Dubuque?

A. About from 12 to 15 cents.

Q. You have given the rate in high water; now what is the average, high and low, between Dubuque and here?

A. The average would be about 11 cents by river and about 16 cents by rail.

Q. How is it from Keokuk here? What is the difference between freight from Keokuk here and from Keokuk to Chicago?

A. The rate is much less from Keokuk here during the entire season.

Q. That is below the falls?

A. Yes, sir; that is accounted for by reason of the expense in transferring at the rapids.

Q. Taking the forks above Keokuk to Saint Paul, is there a general similarity of rates to Chicago and to Saint Louis as a rule during the year round?

A. That applies as a rule, except from Keokuk down.

Q. I speak of all points above the falls.

A. Yes, sir.

Q. It costs the same to transport commodities to Chicago that it does to Saint Louis?

A. Yes, sir.

Q. Then Saint Louis and Chicago are competing points for all trade above the falls of Keokuk?

A. Yes, sir.

Q. You say you are the president of this transportation company?

A. No, sir; the general freight agent.

Q. Are there any other steamboat transportation companies on the upper river except yours?

A. There are.

Q. Is there active competition or is there a community? I mean is there a common arrangement among them as to rates of freight?

A. There is a competition between the Keokuk Northern Line and the line known as the Diamond Joe Line.

Q. Are there but two lines?

A. But two lines running above Saint Louis.

Q. Do you ever arrange for common rates between each other?

A. We have; but it has only lasted for a short time. We have not had any arrangement with the Diamond Joe Line now for over three years. The name of the Diamond Joe man is Mr. Reynolds. He makes his own rates, and I make our rates for the Keokuk Northern Line Packet Company.

Q. Do you not confer together and agree upon your rates in the course of the season?

A. There have been conferences between the two lines and the railroads, but recently it has not amounted to anything. They could not form an agreement that would satisfy all, and hence each line is working on its own resources. We are all competitors for the products of the valley.

Q. What proportion of heavy freights; No. 4 freight, wheat, grain, corn, &c., is brought down in barges, and what proportion in steamboats? By barges I mean flats, &c.

A. Barges are what we use. We use barges the entire season through.

We use them in the spring for the reason that there is such a large quantity comes forward that we have to use the barges, and we use them in the fall, also, for that reason, and in the summer on account of low water.

Q. Do you carry any wheat in bulk on your steamboats?

A. We do not carry any. It is all carried in the barges. We cannot build our boats to carry grain in bulk.

Q. Do you carry it in sacks?

A. We carry in sacks during the low water, for the reason that bulk-grain cannot be transferred at the rapids at low water and compete with the Chicago rates.

Q. What proportion of the grain that is shipped from ports above Keokuk goes to Chicago and what proportion goes to Saint Louis for a market?

A. I should suppose about three-fourths go to Chicago and one-fourth comes to Saint Louis.

Q. Is that which comes to Saint Louis consumed here?

A. Probably I had better state the reason why it goes to Chicago. To-day we are having a low-water season. At Keokuk to-day the rate is seven cents and a half a bushel on corn and wheat from Keokuk here. Twenty miles above, the rate is just double, and the reason is on account of—

By Mr. CONKLING:

Q. State that again, if you please.

A. We are having a low stage of water to-day in the Mississippi. The rate from Keokuk, at the foot of the rapids, is seven and a half cents a bushel on wheat and corn. Twenty miles above, the charge is 15 cents. The reason is the expensive transfer at the Des Moines Rapids.

By the CHAIRMAN:

Q. What is that expense?

A. The company I represent keeps the expense of the transfer every year. One year it cost \$211,000.

Q. You have not got the cost by the bushel?

A. No, sir.

By Mr. SHERMAN:

Q. That was your own company's expense?

A. Yes, sir.

By the CHAIRMAN:

Q. How is that transfer made?

A. It is made in lighters on barges and on the cars.

Q. How do you transship from the boat to the barge, or the cars; by an elevator?

A. We have no elevator, and hence we cannot, in low water, bring grain to Saint Louis in bulk.

Q. So that all you bring down by boats is brought in bags?

A. Yes, sir; entirely. That is owing to the obstruction. If the canal was completed we could bring bulk-grain here the entire season, and hence we get so small an amount of the grain of the Mississippi River on account of the transfer at the rapids. The grain-buyers at the upper end ship entirely in bulk, and they will not go to the expense of getting sacks to ship it. It is estimated that about ten trips wears a sack out. The outlay is consequently very great.

Q. What do you estimate the cost per bushel in carrying by sacks as against carrying in bulk, or have you made any estimate?

A. We could handle it 25 per cent. less in bulk than in sacks.

By Mr. SHERMAN :

Q. Do you know whether the grain that is brought here from the upper river country above Keokuk is exported from here or consumed here? It is brought here in sacks, as I understand; now is it consumed in this place, or exported from here?

A. In the spring of the year the greater part of it is exported to go south.

Q. Does it go through elevators in bulk, or how is it transferred here?

A. It is transferred out of barges, brought here into the elevators, and reloaded into large barges to take to New Orleans.

Q. The same vessels which bring grain here do not go on to New Orleans. It is exchanged here?

A. Yes, sir. This is a point of transshipment, for the reason that the barges used on the upper river are too small to go through. They are too light in their construction. The board of underwriters require a barge to go below here to be built very strong, and the result is it prohibits our barges from going below. The barges below here are, on the contrary, built so heavy that they cannot go above on account of the rapids.

Q. When the canals are completed will there be the same necessity for a transfer here into different classes of vessels?

A. There will not.

Q. Then the barges, you think, will go how high up the river?

A. A boat can go to Saint Paul, get a cargo, and take it back to New Orleans.

Q. There will then be no necessity for transshipping?

A. No necessity, especially during the high-water season.

Q. What would be the cost of transporting wheat or corn from Saint Paul to Saint Louis in case the two canals at Des Moines Rapids and at the upper rapids were completed?

A. I will explain to you. In our tariff we have six terminal points where the rates terminate. For instance, a rate from Saint Paul comes down to the foot of the lake or to Reed's Landing, as we call it. Is it necessary that I should state this particularly?

Q. Take it in your own way.

A. As I say, we have six terminal points, and the rates, as the point nears Saint Louis, are lessened. Giving a rate from Saint Paul to Saint Louis probably is not explicit enough for the whole route.

By the CHAIRMAN :

Q. Give us the rates between each of these terminal points, if you remember them.

A. From Saint Paul to Saint Louis would be 10 cents per bushel.

Q. Eight hundred miles?

A. Yes, sir. Then from Winona it would be 9 cents per bushel.

Q. What is the distance from Saint Louis to Winona?

A. About six hundred and sixty miles. Then we take Prairie du Chien as another terminal point. We make that 8½ cents.

Q. The distance, if you please?

A. That is five hundred and twenty-four miles. The next point is Dubuque. We make that eight cents.

By Mr. DAVIS:

Q. What is the number of miles?

A. Four hundred and forty-five miles. Davenport, 7 cents, three hundred and fifty-four miles; Keokuk, 5 cents, two hundred and twelve miles.

By Mr. SHERMAN:

Q. I see in this statement which you make a difference of only 2 cents between Davenport, which is above the falls, and Keokuk, below the falls, and as I understand you the transfer costs 7 cents. Perhaps I do not understand you aright.

A. How is that, sir?

Q. I understand you to make a difference between Keokuk, below the falls, and Davenport, which is above the falls, of only 2 cents a bushel.

A. Yes, sir.

Q. And yet I understand you to say that the cost of transfer is a good deal more than that, or, say, 7 cents. Perhaps I misunderstood you.

A. Not the transfer as 7 cents. The rates I have given you were at a good stage of water going over the falls. At the lower rapids that rate applies when we light up, say, one-third of the boat's cargo.

Q. The rates you give are for a high stage of water?

A. What we call a fair stage and when steamers can cross the falls by lightering. That rate applies whenever they can cross the falls, even if they take out the entire cargo. The custom of the trade is, when the water falls we put cargo on the two barges and keep the boat light. As long as the boats can cross those rates apply. When the boat cannot cross, then we adopt the present rates, which at Keokuk are 12½ cents per hundred, and to points above the rapids 25 cents, or 100 per cent. higher, and that advance is made on account of the transfer at the rapids, the expense of which is so heavy. To-day we are paying at the head of the rapids 40 cents an hour to handle cargo, and the same at Keokuk, making 80 cents an hour to handle a boat cargo in the two transfers.

Q. You have now given us the present cost at a good stage of water when you can get over the falls; I wish you, if you please, to answer my question of a little while ago. What would be the cost of transporting grain from these different points when the canals are completed which are now in process of construction? I mean the canal around the Des Moines and the work around the Rock Island Rapids.

A. Do you mean at a fair stage of water?

Q. No; I mean at an average stage of water, when you can have the benefit of going through the canal, what would be the fair cost in your judgment?

A. From Saint Paul to Saint Louis do you mean?

Q. Yes, sir. Do you pay tolls on the canals, or are they free canals?

A. We hope these will be free, but we have not yet been informed as to that.

Q. Well, upon the assumption that they are free, what rate could you transport wheat or corn from Saint Paul to Saint Louis for?

A. I had better make two statements to give you a full comprehension of the matter. In the spring of the year and during a fair stage of water, from Saint Paul here, our rates are uniform until we are compelled to light and cross the rapids, and as the water falls then we advance rates. Now, in my opinion, when these improvements are made on the Rock Island Rapids, and the canal finished at the Des Moines Rapids, our spring rates will prevail nearly the entire season, and hence

Saint Louis will not be cut off from the large receipts that she will get by the improvement of the canal.

Q. In other words, you can maintain the rates that you charge now in high water?

A. Yes, sir; through the entire season of navigation, by the improvement of the two rapids.

Q. What do you count as the cost of going through these canals and lockages; the delay, &c.?

A. The delay at the lower rapids, a distance of twelve miles, will not exceed —; the difference between going through the canal and across the rapids will not exceed an hour and a half, or, say, two hours at the outside; that is lockage and all. There are two pin-locks in the canal. There are two lifts in the canal. We have to go through the canal about one-half slower than across the rapids. So that the time in crossing, outside or inside, will not exceed, say, two hours.

Q. What difference would it make if you have to pay for each of these canals a tonnage tax of 25 cents a ton, carpenters' measure?

A. For canal tolls, do you mean?

Q. Yes, sir.

A. We could pay that and save on our expenses 500 per cent.

Q. Then the general answer is, that you would be able to transport from Saint Paul and intermediate points to Saint Louis at about the present rates in good ordinary water?

A. Yes, sir.

By the CHAIRMAN:

Q. Those rates which you gave were the high-water rates?

A. The spring rates, so called.

Q. And the rates you gave awhile ago are the present low-water rates?

A. Yes, sir. The present rate is 100 per cent. higher than if the rapids were improved.

Q. You spoke a moment ago of the aggregate amount paid by your company for transferring at the falls. What was it?

A. Two hundred and eleven thousand dollars.

Q. Do you know how many tons were transferred? I wish to arrive at the average cost per ton for transferring.

A. I know what the company I represent transferred. It was in 1866. There was more competition on the river than at the present time.

Q. That was the time this expense was incurred?

A. Yes, sir.

Q. What was the tonnage transferred that year?

A. I do not know, for the reason that the company I represented did not handle all the freight that year. There were other competing lines on the river.

Q. So that you have no way of arriving at the cost per ton of that transfer?

A. I have; yes, sir. I have the number of packages handled by the company that year.

Q. I would like to have that furnished before we leave your city.

A. I will endeavor to have it presented to you.

By Mr. SHERMAN:

Q. Do you not think that with free navigation and competition the rate could be reduced below ten cents a bushel from Saint Paul to Saint Louis?

A. It can be.

Q. What estimate, say, would be a fair compensation for the actual outlay, calculating the cost of vessel and all expenses of vessel, for transporting wheat, with the rapids improved?

A. It can be done for seven and a half cents a bushel.

Q. Can it be transported at that rate by river and rail to Chicago?

A. It cannot.

Q. Why is not that rate fixed now in the stage of water which would justify you in transporting? Why do you not now carry at that rate? I mean at a good stage of water.

A. I would state that there are probably three reasons. The first is, that a man here is cut off by the obstructions at the Balize, below New Orleans, or, rather, that the Saint Louis market is cut off by the difficulty of exporting from New Orleans. Hence the amount of grain coming to Saint Louis is not great enough to justify companies putting on barges which would carry grain to this port cheaply; that is, putting on tow-boats that would tow from five to eight barges, loaded. A tow-boat can tow from five to eight barges from Saint Paul to Saint Louis.

By Mr. STANARD:

Q. You mean, in other words, if you had the quantity to carry it, you could bring it at that price?

A. That is what I mean. It is quantity which cheapens transportation.

By Mr. CONKLING:

Q. By what line does grain go from Keokuk to Chicago?

A. It goes by the Toledo, Wabash and Western Road.

Q. Any other?

A. The Chicago, Burlington and Quincy Road.

Q. Any other?

A. I cannot just name the other road. Those are the main lines.

Q. Do you know the distance?

A. I think it is about two hundred and fifty miles.

Q. Did you state the freight by river, per bushel, from Saint Paul, or Winona, to Keokuk, before you came to the occasion to transfer?

A. I did not.

Q. I mean to the point above the falls, which is Burlington.

A. The first point is Montrose, then Fort Madison, and then comes Burlington.

Q. Which point corresponds with the railroad; which is the railroad station?

A. Fort Madison and Burlington. Burlington is the main point.

Q. How far are those two points apart?

A. Twenty-two miles.

Q. State the freight by river from Saint Paul to those points.

A. On a good stage of water their rule is five cents per hundred less to Burlington and Fort Madison than to Saint Louis.

Q. Five cents per hundred less in high water?

A. In a fair stage of water.

Q. Is it 5 cents per hundred or per bushel?

A. Per hundred.

Q. And by a fair stage of water do you mean a stage of water which enables you to run without transfer—without transshipment?

A. I mean a stage of water which enables us to cross the rapids with the boats light—without cargo.

Q. That is 5 cents less than to Saint Louis. Do you know the charges on that same grain from Burlington to Chicago?

A. It is about 15 cents per bushel.

Q. Are the rates on each of the roads the same?

A. Very nearly the same.

Q. Varying somewhat with the season of the year?

A. Varying a little. The rate is lower during the summer than it is spring and fall.

Q. Lower than it is in the winter, I suppose?

A. The highest rate prevails in the winter. All along the Mississippi Valley as soon as navigation is suspended all the railroads put up their rates.

Q. That, I suppose, they put upon the ground, first, that it costs somewhat more to carry in winter, and second, that there is a block of freight; a great demand for freight, and that their rolling-stock, and all that, is overtaxed?

A. That is the reason in part. I think the main reason is, however, that they have the trade to themselves and they can make an arbitrary rate.

Q. Yes; but I say they justify it upon the grounds that I have suggested?

A. Yes, sir.

By Mr. SHERMAN:

Q. Can you state the relative market-value of wheat and corn in Chicago and Saint Louis; I mean the general market-value?

A. The market-value of all the cereals is generally a little higher here than in Chicago.

Q. Are you able to give us any tables which will show the running value of wheat and corn in Chicago and Saint Louis compared?

A. You can get those through the secretary of the Merchants' Exchange.

By Mr. CONKLING:

Q. Let me understand one thing further. What is the freight from Saint Paul here now? You have stated it; please state it again.

A. Twenty-one cents per bushel.

Q. Now to Burlington it is 5 cents less. That is 16 cents a bushel?

A. Yes, sir.

Q. From Burlington to Chicago it is fifteen cents. That is 31?

A. Yes, sir.

Q. So that, if I understand you, using river to Burlington and rail from Burlington to Chicago, corn is laid down—

A. Excuse me. You apply a bushel there to a hundred. It is 21 cents a bushel to Saint Louis, and it is 18 cents to Burlington.

Q. Then preserving the same measurement of a hundred-weight it is 18 cents and not 15 from Burlington to Chicago?

A. You asked me the rate from Saint Paul to Saint Louis, and from Saint Paul to Burlington. The rate is 21 cents a bushel to Saint Louis, and 18 cents a bushel to Burlington.

Q. Instead of its being 5 cents less, then, it is 3 cents less, counting by the bushel?

A. Yes, sir.

Q. How much is it per hundred pounds from Saint Paul here?

A. Thirty-five cents per hundred.

Q. And 21 cents per bushel?

A. Yes, sir.

Q. And 18 cents to Burlington?

A. Yes, sir; per bushel; and 30 cents per hundred.

Q. Eighteen cents and 15 are the two freights from Saint Paul to Chicago by river and rail. Is that right?

A. That does not give the rate. Wheat from Saint Paul does not come as low down as Burlington. Fulton City is the lowest point.

Q. Let me begin again and see if we cannot understand each other. By what line does grain get from the Mississippi River above here to Chicago?

A. It goes by four routes. Shall I name them?

Q. If you please.

A. From La Crosse, Prairie du Chien, Dunleith, and Fulton City.

Q. Which of these routes carries the most?

A. La Crosse.

Q. Now let us take that and adhere to it. What is the freight from Saint Paul to La Crosse by river? and speak, if you please, of bushels, and not of hundred pounds.

A. Of the grain that is going east we make a through rate.

Q. I will come to that in a moment; but first, if you please, answer the question. What is the freight—for whether it is the proportion of a through freight or a freight by itself, of course you know the amount—what is the freight from Saint Paul to La Crosse by river, speaking of bushels?

A. We carry no local freight to La Crosse—no local grain. That is not the terminal point of shipment.

Q. Do you not know how much is allowed on a bushel of wheat from Saint Paul to La Crosse, no matter where it is going to, if it goes by river?

A. Yes, sir.

Q. Will you not state, then, how much it is?

A. I omitted to bring my freight tariff. If I had it here I would give it exactly. There is now a new tariff.

Q. I do not care about the new tariff. Take the old tariff. How much is it on the last tariff you remember from Saint Paul to La Crosse, on a bushel?

A. I will state here that the upper end of the river is in charge of our general superintendent, and he has charge of all those rates.

Q. Do you know the rates yourself, sir?

A. I do by referring to the tariff.

Q. If you know it, and if you can state it, please do so. If you do not know it, of course I will not press you.

A. [Calculating.] It is about 6 cents a bushel.

Q. Six cents a bushel from Saint Paul to La Crosse?

A. Yes, sir.

Q. How far is that?

A. One hundred and seventy miles.

Q. From La Crosse to Chicago is how far by rail?

A. About two hundred and sixty miles.

Q. Put those two sums together, if you please.

A. Four hundred and thirty.

Q. Now, it is 6 cents to La Crosse; how much is it from La Crosse to Chicago, by rail, per bushel?

A. About 9 cents.

Q. That is 15 cents for four hundred and thirty miles?

A. Yes, sir.

Q. How much, now, do you say it is a bushel from Saint Paul to Saint Louis?

A. Twenty-one cents.

Q. How many miles is that?

A. Eight hundred miles.

Q. Now, taking that bushel of grain of which we are speaking, what is it worth in Chicago, taking corn or wheat, as you know each?

A. Compared with Saint Louis?

Q. I was coming to that, but my question is simply how much is that bushel of grain worth now in Chicago?

A. I should have to refer to the secretary to see. He says \$1.

Q. How much is it worth in Saint Louis?

A. A dollar and two cents it was sold at yesterday.

Q. Does that statement fairly illustrate the difference of value of a given grade of grain in Saint Louis and Chicago the year round?

Mr. GEORGE BAIN. Allow me. Captain Mason is not in this business and would not know anything about it.

By Mr. CONKLING:

Q. [To Mr. Bain.] Will you be good enough to give me the information at this moment. We will take it hereafter, but I wish to ask a question which is in the captain's line. How does grain of a given grade compare in price in Chicago and Saint Louis?

A. At certain seasons of the year, when freights are low between Chicago and Buffalo and on the Erie Canal, wheat is higher in Chicago than in Saint Louis. When we have got an interior southern demand for flour, which we always have during the winter, wheat is higher here, sometimes as much as 12, 15, or 20 cents a bushel, than in Chicago.

Q. Now, if you please, speaking of foreign-bound grain, going to Europe, how do the two markets of Chicago and Saint Louis compare with each other?

A. The Grain Association of Saint Louis, while making the test about this climatic difficulty that was talked so much about, paid more for grain here than the same quality of grain was worth in Chicago.

Q. How much more?

A. Well, from 3 to 5 cents per bushel at that time.

Q. What time was that?

A. That was in 1869, four years ago.

Q. Now, if you please, speaking of this year, which I suppose is as good an example as any, how has the grain-market at Chicago and at Saint Louis compared; and I do not want to take an exceptional case of grain here for internal southern consumption, or for some special purpose anywhere else. I wish to take the general flow of prices at different seasons.

A. The price of each has been about the same here as in Chicago. The price of corn and oats has been higher here than in Chicago as an average. There have been occasional instances where they were lower here, but very seldom.

By Mr. CONKLING:

Q. [To Captain Mason.] I was going to ask you about this through rate. Take grain at Saint Paul for an eastern market, how far is it billed?

A. To Chicago.

Q. And this rate which you have given me, dividing it into 9 cents and 6 cents, represents the through rate?

A. Yes, sir; 15 cents per bushel.

Q. Suppose you carry that same bushel of grain to La Crosse and stop it there, do you charge more than 6 cents?

A. We do.

Q. How much more?

A. We charge about one-quarter more.

Q. That would be a cent and a half more, or $7\frac{1}{2}$ cents?

A. Yes, sir.

Q. Suppose the railroad takes that grain, not on a through freight from you, but in the first instance at La Crosse, and carries it to Chicago, how much more does it charge?

A. About 25 per cent. more.

Q. That would be 2 cents and a quarter more?

A. Yes, sir. I will state that there is some wheat billed through to Buffalo, which is a terminal point, and flour is very often billed through to New York.

Q. Does that make any difference in the rate?

A. It makes a lower rate.

Q. How much lower does it make it if you bill to Buffalo than if you bill to Chicago?

A. On a through rate you would make, say, 15 per cent.

Q. That is, you deduct 15 per cent. of freight billing to Buffalo instead of billing to Chicago. Suppose you bill from New York, how much more do you deduct?

A. That is my rate to New York.

Q. I asked you about Buffalo; 15 per cent. reduction from New York, you say. Now, how much is the reduction to Buffalo?

A. I am not well enough posted to give you the information which I should like to. I should like to have it represented exactly as it is. I will state this: that connecting lines in billing through, the farther distance the freight is billed the lower the rate. The connecting lines prorate the reduction. Chicago is the terminal point for nearly the entire cereals of the Upper Mississippi, and also Milwaukee is; but some shippers bill through to Buffalo, and there are large amounts of flour billed through to New York. I might state in general terms that in billing through to New York the rate is proportionately lower than to Chicago.

Q. Does this reduction of freight the farther it extends fall equally upon the river and the rail?

A. It does.

Q. So that you bear the same percentage of reduction that the railroad does?

A. The river bears the greater percentage.

Q. Then it does not fall equally, does it?

A. On a long distance it does not fall equally. I had better state that it does not fall equally.

Q. Does it fall equally in proportion to distance?

A. It is largely in favor of the river.

Q. How in favor of the river? Do you mean that less falls on the river than on the rail?

A. I should state that the rate is lower on the river than on the rail.

Q. Then it falls unequally, and heaviest on the river?

A. No, sir; it falls the smallest. State the question again, and let me get the drift of it.

Q. I will. You have a certain distance from Saint Paul to La Crosse, and the railroad has a certain distance from La Crosse to Chicago?

A. Yes, sir.

Q. Then there is a certain distance from there to New York. You have told us that on goods billed through from Saint Paul to Buffalo there is a reduction per cent., and billed through to New York a still greater reduction per cent. I ask you whether that reduction falls equally upon the river and the rail in proportion to the number of miles which each carries it, and if it falls unequally I ask you to state the inequality.

A. It is equal.

Q. You say now that it falls equally upon the river and the rail each, according to the distance that each carries.

A. Yes, sir. Excuse me; I got the impression as we progressed in the question that you wanted me to state the comparison between the river and the rail route. I got that mixed up with the question, which was the reason I asked you to repeat it.

Q. But now you state it as you mean?

A. Yes, sir.

By the CHAIRMAN:

Q. What are the number of vessels in the Diamond Joe Line?

A. They have six steamers.

Q. What number have you in your line?

A. We have twenty-three.

Q. How do they compare in size?

A. Our line of steamers are a size larger than theirs.

Examination of JOHN A. SCUDDER, president of the Memphis and Saint Louis Packet Company.

By the CHAIRMAN:

Question. Please state the obstructions in the Mississippi River from here to Cairo, and also between Cairo and New Orleans, if you can give them.

Answer. What kind of obstructions do you mean?

Q. The general character of the obstructions.

A. The obstructions between this and New Orleans are mainly between here and Cairo. They are sunken wrecks, snags, and logs washed in from the banks of the river.

Q. Describe in general terms the nature of the obstructions.

A. Take, for instance, the wreck of a steamboat, sunk, probably, years ago. That wreck, when it sinks, will form a bar, so called, and very frequently an island will form on that obstruction. In the course of years, when that is forgotten, the channel of the river will change, probably, on to the head of the island and wash it away again—wash the island entirely away, leaving the wreck there, and those are the wrecks which give us a great deal of trouble.

Q. How many of those are there?

A. There are a very large number. I would hardly undertake to say, but I suppose there are five thousand wrecks between this and Cairo alone. I speak now of all the boats that are sunk.

Q. Those are steamboats and barges?

A. Yes, sir; I should say that the navigation of the river has been improving ever since my knowledge. The running of steamboats over the river improves it. We are becoming more familiar with those wrecks.

By Mr. SHERMAN:

Q. I wish you would describe the nature of the obstruction of bars—the formation of bars across the river.

A. We do not consider a bar an obstruction. It is an obstruction in a certain sense; but a bar is formed where the channel goes into two or three places. For instance, on the head of an island, a part of the water will go down on one side of that island and a part down the other, and that is always a shoal place, or what is called a bar or obstruction. An obstruction by a bar is always where the river is divided and not where the water is confined to one channel.

Q. Do these bars change from year to year?

A. Yes, sir. We do not know what does change them, of course, but very frequently they are changed by a wreck sinking.

Q. The current of the river changes them, I suppose?

A. Yes, sir; it seems to take but very little to change the channel.

Q. Are they improved by dredging?

A. It temporarily improves them, sir. While they are working it will do so. Dredging, however, fills up in two or three hours. It does not amount to anything except while they are working at it.

Q. According to your experience, what form of improvement has proven most serviceable?

A. By wrecking-boats taking out the obstructions.

Q. What has been the effect of the construction of these wing-dams?

A. We have had none below here, in my observation, but my opinion is that they will do very good service.

Q. They confine the water in a given channel?

A. Yes, sir.

Q. Does not the current often strike against the bank, and make an entire new channel, cutting out the bank?

A. O, yes, very frequently. For instance, where there is a soft bar and the river runs into a close bend, it will frequently wash in until it gets very deep in the bend, and the river then will shoot off in another direction, and that bend will fill up. As the river cuts out into the bend, probably next season, that bend will fill up, and the water will change again out into the original channel.

Q. Are there cases where the wing-dam has itself been left on a bar and a new channel made between the wing-dam and the river?

A. I do not know of any such cases, but I should suppose that might occur. There are none built between here and New Orleans yet. In this river it would be more likely to do so than it would in the Ohio River. In the Ohio River there is not much cutting of the banks, nor is there the same volume of water. Where a wing-dam would answer a very good purpose in the Mississippi it might now answer in the Ohio.

Q. What is generally the bed of the Mississippi River?

A. Quicksand.

Q. Is there any rock foundation or gravel?

A. Very little. We do not know of but one place between here and Cairo; and none that we know of below there, where there is a rock or sand foundation. We have one between here and Cairo of a gravelly bar kind.

Q. All the rest is alluvial?

A. Yes, sir.

By the CHAIRMAN:

Q. What was the cause of those numerous wrecks?

A. Sunken boats never removed by the Government. There was the great trouble. It is my opinion that the wrecks of the river increase the cost of transportation more than everything else combined. That is my experience beyond any question. Even the want of water

is not so great as the cost of these very wrecks that I speak of. To demonstrate that to you more fully, our boats going out here draw $4\frac{1}{2}$ and 5 feet of water. There is a good 6 feet from here to Cairo now, but we are afraid to put the freight in the boats on account of these very obstructions. An ordinary-size boat, such as ours, will carry twenty tons to the inch. We are now loading 5 feet where there is 6 feet in the river. They will carry, as I say, twenty tons to the inch, and that is two hundred and forty or two hundred and fifty tons that they would go without, on account of these very wrecks. Our boats have to be built for these wrecks very much stronger, and they cost a very large amount more, of course increasing the insurance and everything of that kind.

Q. How do you account for so large a number of these wrecks originally?

A. Well, for years, ever since the river was navigated, these wrecks have been sinking and lying there. There is no estimating the number, of course, but I think five thousand would be a small estimate on the number lying between here and Cairo alone. We can count in one bend that we know of fifty or sixty steamboats.

Q. What is that bend called?

A. They have given it two or three names lately. It is called Goose Island. We call it the Grave-Yard. But, fortunately for the river, when one of these wrecks sinks, the channel will find its way somewhere else, or else the river would be unnavigable. The character of the river is such that whenever the wreck sinks, the channel cuts around it and would cut the bank away around it.

Q. And deposits are made on it?

A. Yes, sir. My theory is that when these wrecks sink they never stop settling. They settle until there is nothing left above the decks except the cylinder timbers, perhaps. They will settle then with the bottom of the river. It is quicksand, and when the sand washes off of them, and the channel changes over them again, that, you see, is a very serious obstruction. We run this river almost entirely by sight—by watching for these breaks. Our company has, this season, made a large number of buoys, and are buoying these wrecks ourselves at our own cost. I do not think our people here realize what these wrecks are costing. For instance, you may take one of Captain Mason's Mississippi boats. These boats do not pass insurance below here at all. Their river closes about the 15th of November. Our river here, in ordinary seasons, is open until the first of January, or the latter part of December. Now that tonnage which is perfectly useless up there might be brought down and utilized below, but it cannot be done because they do not insure, in consequence of these wrecks and sways. Our boats are built large and heavy. Their ordinary boats will not cost over \$30,000 or \$40,000, while ours cost \$130,000. They have some boats, but very few of them which cost more than \$30,000 or \$40,000, and, as I say, ours cost upon an average \$120,000. They have been made very strong, making them draw more water.

By Mr. DAVIS:

Q. What is the difference in the tonnage of vessels up and down the river?

A. Our boats are a little smaller than the New Orleans boats. The tonnage of our boats will average, I suppose, nearly a thousand tons. Theirs will average about six hundred. But you see those boats cannot run below here in consequence of these very wrecks.

By the CHAIRMAN:

Q. State the number of lines of vessels running from here to all points south, making this their terminal point.

A. Our own company runs three lines. Would you call that one, or three?

Q. We will call that three under one control.

A. There are seven lines of boats, I think, below here.

Q. That is, seven lines, counting yours as three?

A. Yes, sir.

Q. How are those other four lines controlled; by one company, or by more?

A. By each one separately.

Q. Can you give us the number of boats in all those lines separately?

A. No, sir, I cannot. We have twelve, and I suppose there are twenty-five others to New Orleans; that would make thirty-seven.

Q. You have twelve in your three lines?

A. Yes, sir; I mean regular boats engaged in that trade. There are a large number of other boats that run there.

Q. A large number of other boats not in any line?

A. Yes, sir.

Q. Is there any combination between those lines?

A. None at all.

Q. Then there are barge lines in addition?

A. Yes, sir; which have as much tonnage as the whole steamboat tonnage.

Q. How are those barges propelled, by tug or steamer?

A. I do not know whether you would call it a tug. It is what we call a tow-boat. You mean by a tug, I suppose, one of these Chicago tugs. We cannot use them, however, on our river on account of the shoalness of the water.

Q. You call them tow-boats?

A. Yes, sir. They are built the same as a steamboat, except the stern-wheel.

Q. Do your rates materially differ at different seasons?

A. Very much, sir.

Q. For what reason?

A. By reason of these obstructions, mainly, and low water, of course. The obstructions are never in the way except during low water.

By Mr. CONKLING:

Q. How far is it by river from St. Paul to Prairie du Chien?

A. (By Captain Mason.) Two hundred and eighty miles.

Q. Will you state the freight per bushel from St. Paul there?

A. It would be 6 cents per bushel.

Q. The same as it is to La Crosse?

A. Yes, sir.

HENRY C. HAARSTICK, vice-president and general superintendent of the Mississippi Valley Transportation Company.

By the CHAIRMAN:

Question. What does that company of yours include?

Answer. It is a company which transports freight from here to New Orleans in barges exclusively.

Q. Please state the character of those barges, giving us a description

of them, so that we will understand what they are, and the nature of the transportation?

A. We have three or four different sizes. They are barges built very strongly, somewhat similar to the hull of a steamboat, with no machinery on them but what we call cargo docks, perhaps twelve, or thirteen, or fourteen feet high above the deck of the barge. They are all the way from 180 to 220 feet long; from 30 to 41 feet beam, and from 6 to 9 feet hold.

Q. What is the tonnage?

A. One size is 650 tons, another size is 1,000 tons, and another size is 1,500 tons.

Q. Can you run those at all seasons of the year?

A. We run them at all seasons of the year, excepting when there is ice in the river.

Q. What is the time of a round trip from here to New Orleans with one of those barges?

A. That is owing a good deal to the stage of water, and the season of the year. In high water we can make a round trip say in twenty days, on an average, and perhaps less sometimes.

Q. How many do you take in a convoy, or whatever you call it?

A. In a tow we take from three to five, owing to the amount of freight.

Q. What is the cost of those barges?

A. They cost from \$7,000 to \$14,000 complete, the cost varying with the size.

Q. What is the cost of tow?

A. The tow-boat and barges together would cost \$110,000 to \$120,000.

Q. Do you mean by that a tow-boat and two barges?

A. No, sir; a tow-boat and from three to five barges. I am now figuring on a full tow.

Q. How many men do you employ on those full tows?

A. It takes perhaps twenty-five in all, including captain, pilots, engineers, mate, firemen, &c.

Q. What is the compensation for the ordinary employes, the workmen—the laborers?

A. From thirty-five to forty dollars per month.

Q. What is the compensation of the officers?

A. The captain's pay is \$200; the pilots receive \$250 each; the engineers receive, one, \$135, the other \$75, making \$210; the mate receives \$100; the steward \$75; the firemen \$60; and the other men from thirty-five to forty dollars.

By the CHAIRMAN:

Q. Have you ever made an estimate of the cost of running tows down to New Orleans and back, the round trip?

A. Oh, yes.

Q. What is it?

A. That is owing a good deal to the amount of freight you carry. As you will perceive if we take down 4,000 tons, or 3,000 or 2,000 tons to a tow, the labor upon them, loading it and unloading it, will be greater for 4,000 tons than it would for 2,000 tons.

Q. Do you know what it is without reference to loading and unloading?

A. I could give you those figures, but I do not know that I could do so now.

Q. What do you understand to be a fair compensation per ton during a good stage of water for transporting from here to New Orleans?

A. With plenty of business and a good stage of water we can take freight down at 15 cents a hundred to New Orleans; that is \$3 a ton.

Q. And make a fair profit out of it?

A. Yes, sir.

Q. Is there any expense in running those barges except the compensation of the men and officers; fuel, interest on the investment, and the maintenance of the vessels themselves?

A. There are sure expenses, so called, outside of officers at this place, at Cairo, and New Orleans, such as wharfage. We pay a very large amount of wharfage both here and at New Orleans and Cairo, for the privilege of landing and discharging.

Q. Can you give us an idea of the amount of the wharfage?

A. I think the wharfage in New Orleans is 30 cents a ton, 10 for river and 20 for river, on the registered tonnage of our barges. Whether those barges are loaded or not makes no difference. For instance, in low water, a fifteen hundred ton barge carries into New Orleans only six hundred tons, but we have to pay wharfage on fifteen hundred tons, and it is the same way at Saint Louis. Here the charge is five cents a ton.

Q. What is it at Cairo?

A. There it is nominal. It is for landing, five or ten dollars for each time of landing.

Q. Are there any other wharfage expenses between here and New Orleans?

A. We only land at Cairo and New Orleans.

Q. Then aside from those expenses there are none others except what you have named?

A. No, sir.

Q. Do you ever make through rates from here to Liverpool?

A. We have in one or two instances only. One reason why we have not been able to do that is that the lines have not been able to run regularly; in other words, they could not tell what the water at the mouth of the river would be, and they never would make regular rates and take their chances on the water and on the freight when they would get in.

Q. Your company has no connection with any steamboat lines, has it?

A. No, sir.

Q. You are rather in competition with the steamboats, are you not?

A. Yes, sir.

Q. Is that barge business increasing or decreasing?

A. It is increasing very much.

Q. You do not carry in bulk at all, do you?

A. Yes, sir.

Q. Do you carry grain altogether in bulk?

A. Yes, sir; we are carrying in bulk both ways. We are the only company which carries in bulk south. We carry bulk grain for less than we do package freight.

Q. Why?

A. It costs us less labor to load and unload, and we make that distinction.

Q. In the rates which were given to the committee a few moments ago by the barge system, your loading and unloading is included, is it?

A. Yes, sir; that includes all.

Q. What are the chief obstructions to that system of navigation between here and New Orleans, if any?

A. The sand-bars and snags are the principal obstructions.

Q. In what way do they interfere with your travel ?

A. In low water we can only load our barges to one-half of the depth that we could in high water. In low water it takes a longer time to make a trip than it does in high water, because if you get to a bad place, as we call it, in the river, in the evening, you have to lay by until next morning at daylight to get over that place, whereas if we had plenty of water we could go along without stopping, as we do in the spring with high water.

Q. Exclusively of the cost of loading and unloading, does it cost you any more to carry a full barge load than a half-full barge load ?

A. No, sir.

Q. What do you estimate the cost, per ton, of loading and unloading, or have you any estimates ?

A. Of bulk, it costs us, perhaps, 30 cents.

Q. Per hundred or per ton ?

A. Per ton. Of package freight it costs, perhaps, 80—from 75 to 80 cents.

Q. By package freight would you include wheat in sacks, and oats and corn in sacks, flour in barrels, pork and lard ?

A. Yes, sir.

Q. Do you mean to say that 30 cents is the cost of loading and unloading ?

A. Yes, sir ; of bulk, and I do not know but that is a little more than the average.

Q. How do you unload at New Orleans from bulk cargoes ?

A. We have two elevators there ; one a transfer elevator, and another a regular elevator.

Q. And you load in the same way here, do you not ?

A. We load here at the elevators.

By Mr. DAVIS :

Q. At a floating elevator, or on the land ?

A. Here we have only elevators on land. We have not a floating elevator here. I would make a correction in one thing, that is the cost of labor on bulk-cargo. In place of its being 30 cents a ton it is only 15 cents.

Q. And you leave it at 80 cents on the package ?

A. From 75 to 80 cents.

Q. Does that include both ends ?

A. Yes, sir ; my statement means both loading and unloading.

Q. Now, as to the elevators, will you be kind enough to state what facilities you have here and at New Orleans ?

A. We have four elevators here. We have elevators here which can handle and give to us, I suppose, two hundred thousand bushels, and upwards, in twenty-four hours. At New Orleans our facilities are not so great. The facilities there are, perhaps, not over forty thousand bushels in twenty-four hours to discharge.

Q. Are they on land or water ?

A. Both. One is, as we call it, a transfer elevator, or an elevator that is on hull. The other is on land.

Q. I understood you to state a moment ago that grain, or rather anything of fourth-class heavy freight, should go to New Orleans for \$3 per ton. Did I understand you aright ?

A. Yes, sir.

Q. What is the charge now ?

A. Our charge now is \$6.

Q. Is there any shipped from here by rail to New Orleans?

A. They could hardly compete at that figure.

Q. That is not the question, sir.

A. I do not know of any going.

Q. Do you know what the rail rate is to-day from here to New Orleans? Our object is to get the difference between the rail and water rate.

A. I do not know what the fourth-class rate is. They are not in competition with us.

Q. Why is it that it ought to be done for \$3 and that \$6 is charged by water?

A. We have only about $4\frac{1}{2}$ feet of water between here and Cairo, and only $5\frac{1}{2}$ between Cairo and Vicksburgh; hence three-fourths of the whole distance is low water, and as we can carry only about 40 per cent. of the freight in the same barges now that we could when we have high water, and as the cost of it to run a tow now and back is greater than it would be in high water, hence the difference. In other words, the receipts for towing now are no larger on fifteen hundred than they would be on three thousand tons in high water.

Q. In a good stage of water what is your regular charge; I understood you had some regular charge between here and New Orleans?

A. In high water do you mean?

Q. Yes, sir.

A. We have carried freight for 15 cents a hundred, and even less, for three months right straight along.

Q. Is that the charge now in a good stage of water?

A. Yes, sir.

Q. Fifteen cents a hundred?

A. Yes, sir; we have carried it as low as $12\frac{1}{2}$ cents.

By Mr. SHERMAN:

Q. I wish to get at the elements of the cost of freight between this and New Orleans. Say heavy freight for shipment to foreign markets. You say 9 cents per bushel. Is that the average taking the year round, or is it only the rate during the best of the season?

A. No, sir; the best of the high-water season we carry freight for less than 9 cents a bushel.

Q. What is your lowest rate?

A. We have carried it this year as low as 7 cents a bushel—corn that went for export.

Q. What portions of the year would that be?

A. That would be during April, May, June, July, and perhaps a part of August, if the river would keep up. It is all owing to the stage of water.

Q. What proportion of the year at 9 cents?

A. The balance of the year we generally have low water or ice; and of course rates go up and down with water.

Q. Would you put it at 9 cents the average, or is that below the average or above it?

A. No, sir; I think that is very near the average.

Q. Is that as low in your opinion as wheat can be transported between Saint Louis and New Orleans, in case the proposed wing-dams are made; is that what you would call a fair compensation for this work, after these improvements are made?

A. No, sir; I think we could carry it for less.

Q. How much less?

A. Perhaps a cent and a half per bushel less.

Q. That would bring it to $7\frac{1}{2}$ cents?

A. Yes, sir.

Q. You think that would be the minimum rate at which this business could be done?

A. Yes, sir; of course everything would have to be very favorable. We would have to have an outlet at the lower end of the river, where we claim we have none now.

Q. Can you state what is the cost of shipping grain from New Orleans to Liverpool with the present inconvenience at the mouth of the Mississippi River?

A. Freights have been as low this year as 11 pence, and as high as 16 pence.

Q. Put that in cents, if you please.

A. That would make it 22 cents and 30 cents per bushel of sixty pounds.

Q. That is freight from New Orleans to Liverpool?

A. Yes, sir.

Q. Is that exceptionally low?

A. Eleven pence, or 22 cents, is, perhaps, lower than it usually is.

Q. What would be the average, taking the year round, of transportation from New Orleans to Liverpool?

A. I should think 14 pence, or 28 cents, would be an average rate by steam.

Q. What reduction could be made on that rate if the proposed canal at Fort Saint Philip was made, making a navigation of 25 feet of water by canal. In the first place, however, are you familiar with the place and with the proposed improvement?

A. Yes, sir.

Q. What would be the rate, then, in case that improvement was made? In your judgment to what extent would that reduce the rate?

A. I think steamers would be glad to get 20 cents, or 10 pence, the year round, and that they could make money.

Q. Then the possibilities of this route from St. Louis to Liverpool would be $27\frac{1}{2}$ cents a bushel for wheat, in case the river was improved at the mouth of the Mississippi, and along the line of the Mississippi?

A. There would be an extra charge of elevator transfer at New Orleans, beside, of a cent a bushel, which would make it $28\frac{1}{2}$ cents.

Q. That you think is the minimum possibility of this trade?

A. Yes, sir.

Q. Can you explain to me the reason why it costs but 5 cents to transport wheat from Chicago to Buffalo, and $7\frac{1}{2}$ cents, under the most favorable circumstances, from Saint Louis to New Orleans; is it in the cost of the boats or the dangers of navigation on the river?

A. The distance is the element. It is twelve hundred and fifty miles from here to New Orleans.

Q. What is the distance from Chicago to Buffalo?

A. It is between ten and eleven hundred miles, I think.

Q. In what respect is the navigation of the Mississippi more dangerous or more expensive than the navigation of the lakes? In other words, what advantages has one over the other in any respect?

A. I do not see any advantage, particularly in the lakes, over the Mississippi River, providing the river was improved—that is, provided the sand-bars and snags were out of the river.

Q. Then there is the advantage in favor of the river of no danger of storms, &c.?

A. Yes, sir.

Q. What would be the effect of the return trip against the stream, in the way of increasing the cost of navigation?

A. That, of course, would be unfavorable as regards the river.

Q. Have you return-freight from New Orleans sufficient to give you a return-load?

A. We have not now, but we hope to have.

Q. What would you expect to carry?

A. Expect to carry imported goods, and do now carry a great many. Since the organization of our company we have made it a study to have freight come that way. We went to our importers here and gave them a yearly rate of freight on imports never to be changed.

Q. Is that business of importing goods directly increasing here?

A. Yes, sir; very much in the last five or six years.

Q. What are the kinds of imports brought here?

A. There has been a great deal of railroad iron, crates of earthenware, tin, soda-ash, steel. I do not know that I could name anything else; groceries, coffee, sugar. There has been a very large amount of sugar, liquors and wines.

Q. State the minimum rate at which you carry on this up-river business, bringing up return-freight.

A. It is about 16 cents a hundred, minimum rate.

Q. What is your ordinary charge for up-freight per hundred—say cotton, &c.?

A. They run all the way from 15 to 20 cents a hundred.

Q. To what extent is cotton brought up the river from New Orleans to Saint Louis?

A. I do not know of any that is coming from New Orleans this way. The cotton which comes here comes from points farther up the river, such as Memphis.

Q. Of course the trade carries the cotton eastward?

A. Yes, sir; cotton goes to New Orleans, in place of coming up the river.

Q. Is there any cotton brought by way of the Ohio River?

A. Yes, sir; there is from points as high up as Memphis.

Q. There are no cotton factories here?

A. Yes, sir; I think there are two or three. Three I know of.

Q. Where would they get their cotton to supply their mills?

A. They get it from Memphis. We have cotton arriving here most every day. They also get it by the railroads southwest of us.

Q. Is there any shipment of cotton from the Red River country or Memphis, by way of Saint Louis to Chicago, or by the northern route that way?

A. No, sir; there are shipments from Memphis that come here and go East, but not to Chicago. They go directly East.

Q. Then, as I understand you, to come back again. You think the possibilities of the route from Saint Louis to Liverpool are 28½ cents a bushel on wheat. How much would that be a ton?

A. Nine dollars and forty-three cents.

Q. That is, a ton of two thousand pounds?

A. I figure thirty-three bushels to the ton.

Q. Please state the cost of transporting wheat, corn, or cereals, from New Orleans to New York City.

A. I do not know that I could answer that question. There is not

much being transported that way of late years. I will say in explanation of my answer to a former question, that, when I spoke of freight from New Orleans to Liverpool, I meant steam-freight. The rate by sail is a good deal less. We have had sail-freight as low as 8 pence, which would be 16 cents per bushel.

Q. How is the wheat actually transported now, according to the current trade?

A. Most of it goes by steam.

Q. Were the examples you gave us awhile ago given with the rate by steam?

A. Yes, sir.

Mr. STANARD. No, sir; some of them were by sail.

The WITNESS. That of this year all went by steam, so far as I know.

Mr. STANARD. Yes, this year all did go by steam.

By Mr. SHERMAN:

Q. [To Mr. Scudder.] There is no wheat or grain transported from Saint Louis *via* New Orleans to New York at all?

A. No, sir; there has not been for the last year or two.

Q. What is the reason of that?

A. The steamers that run between New York and New Orleans are not adapted to the trade of carrying bulk grain.

Q. Would the difference between the price of wheat in Saint Louis justify the transportation of wheat *via* New Orleans to New York, under the most favorable circumstances you have mentioned?

A. I think it would. I think if we had 22 or 24 feet of water at the mouth of the river we could send wheat to New York, and compete with other routes.

By Mr. NORWOOD:

Q. Have you ever given any attention to the projected line from the Mississippi by rail and communication to the west of Florida and across to the Atlantic?

A. No, sir; I cannot say that I have. I have had conversation with gentlemen in regard to it.

Q. What I meant to say was, have you ever yourself considered the question in regard to its cheapness, its feasibility, &c.?

A. I have had a conversation with, I think, the superintendent of the road which runs—. I cannot think of the road at the present time.

Q. I wished to obtain your views on it, if you had considered the subject.

A. We did not consider it feasible, because our barges would have had to be sent out, and we did not think that they could compete with a steamer direct, providing that there was plenty of water on the bar.

Q. Direct to what point?

A. To Liverpool or New York.

Q. For what reason did you come to that conclusion?

A. There was in the transportation of it a double handling, besides a hundred and eighty-three miles of railroad to Cedar Keys. Is that the line you have reference to?

Q. No, sir; I am speaking of the proposed water-line from the mouth of the Mississippi to the Atlantic coast, through the peninsula of Florida.

A. O, I have not given that any attention, sir.

By Mr. DAVIS:

Q. I wish to ask generally as to the commerce of the river and Saint

Louis, but particularly as to what dates the vessels referred to in the reports left here. I do not know who can answer that question.

Mr. STANARD. That is contained in the report.

Examination of Mr. E. O. STANARD:

I will state that in my experience as a merchant in shipping down the Mississippi River and in shipping to Liverpool, both corn and wheat, that in the years 1868, 1869, and 1870, I not only shipped a large amount of both to Liverpool, but also to New York and some to Portland and some to Boston, both in bulk and in sacks. I have shipped corn at 25 cents a sack, by the cargo, from New Orleans to New York, and we have paid from 13 to 15 cents in bulk from New Orleans to New York. It usually costs a cent more to Boston, and perhaps a cent and a half more to Portland. I have shipped large quantities of flour from New York to Saint Louis by the way of New Orleans, at high water. I remember one cargo I shipped as low as eighty cents from Saint Louis to New York by way of New Orleans.

By Mr. SHERMAN.

Q. Eighty cents for what?

A. Eighty cents a barrel. I have often shipped from Saint Louis to New York for a dollar a barrel at a good stage of water. And I claim that a bushel of corn or of wheat, with 8 feet of water between here and Cairo can be put into New York, into Providence, Portland, Boston, or Philadelphia at good paying rates at $7\frac{1}{2}$ cents a bushel from Saint Louis to New Orleans, and not to exceed 12 to 13 cents from New Orleans to New York.

Q. That is 20 cents per bushel through?

A. Yes, sir; on grain. It was shown in your examination here of Mr. Haarstick, who is very practical in shipping matters, that a bushel of corn or wheat could be put into Liverpool, with the average stage of water, say at $7\frac{1}{2}$ cents to New Orleans, and at 10 pence, or 21 cents, a bushel from New Orleans to New York. The distance from New Orleans to Liverpool is about five thousand miles, and from New Orleans to New York about three thousand miles. Of course it can be put from New Orleans to New York very much cheaper than it can be put into Liverpool. A gentleman from New Orleans says it is seventeen hundred miles, and my figures, which I have heretofore given you, would better correspond with that distance than they would with three thousand miles from New Orleans to New York.

I will state further, that my branch house in New Orleans, last year and the year before, sent over a million and a half of bushels of corn during the season, say from April until October, November and December to Liverpool, to Paris, and to Bristol, England. We have never, with the exception of a few bushels to the cargo, had any damaged; that is, such damage as would accrue from leakage, which would occur to any sea-going vessel, or vessel running the river. Almost without exception this property has gone through in sound condition. These are the results of my own practical experience, but we have been greatly annoyed in New Orleans in this way, and that is one of the chief obstacles now to the navigation of the Mississippi River and to exporting. I mean the bar at the mouth of the Mississippi River. We get large amounts of stuff there sometimes and there are no vessels to carry it. Then, of course, the man up the Mississippi River, who is a shipper, gets discouraged, and does not ship again, because grain is not an article in summer-time that will stand to lay long. It must be moved.

Ship-owners upon the other side will hear of large amounts of corn laying in New Orleans ready to go and they will start their vessels there. The man up here has been discouraged on account of his detention before and he has quit shipping.

The ships are there when there is no stuff. The stuff is there again when there are no ships. The reason ships do not come there regularly is because often they get to New Orleans, and there is no more than 16 or 17 feet on the bar, and they cannot get in. They lay out pounding on the Gulf of Mexico sometimes two or three weeks before they can get in with their cargoes.

If we could have a regular stage of water at the mouth of the Mississippi River, at New Orleans as they have at other seaboard ports, vessels would come regularly, and would come with the certainty of making the port as they do at other places. I think that the improvement of the mouth of the Mississippi River, by a canal, is the solution to the whole question. You can then have a regular transportation there. You will have a regular supply and additional facilities will also be offered for the people of the northwest for marketing their products.

By Mr. CONKLING :

Q. What do you think is a fair average point up the river from which grain comes ; what point would you fix as the one which would represent as much above it as comes from below it ?

A. Do you mean about the center of the grain region of the northwest ?

Q. Yes, sir, as measured by the river ; up and down the river.

A. Yes, sir. I should think Dubuque was about the center ; Dubuque or Muscatine is about the center of the wheat-growing region, while the corn-growing region is farther south, and the corn is the great cereal after all.

Q. How far is Dubuque from here by river ?

A. Four hundred and fifty-four miles from Saint Louis.

Q. How far is Dubuque below Saint Paul ?

A. Three hundred and forty-five miles.

Q. How far is it below Prairie du Chien ?

A. About seventy-two miles. The center of the corn region would be south of Keokuk.

Q. The centre of the wheat region, as you fix it, is seventy-two miles below Prairie du Chien ?

A. I am speaking of spring wheat, and the center of that. It is somewhere between Minnesota, Wisconsin, Iowa, and Northern Illinois. That is the great spring wheat belt.

Q. You spoke of solving the whole problem of transportation, as to that, by a canal at the delta of the Mississippi ?

A. As to that with other cereals.

Q. But you include that ?

A. Yes, sir.

Q. Well, I am considering one thing at a time. How, in your view, would that solution of the problem compare with connecting the Mississippi River and the lakes at Prairie du Chien and giving an outlet right on to the Saint Lawrence ?

A. My own impression is that for wheat, during the summer months, if the cost was not too great in the solution of your transportation problem, it would have an advantage over the southern route for spring wheat.

Q. Do you think the cost of transporting spring wheat, if you could

make a water-route all the way, connecting the river and the lakes, as I have indicated, and then right on down the Saint Lawrence, for example, to the sea, do you think the cost of transporting spring wheat from the point that you fixed to Europe would be greater than to carry it down to the delta of the Mississippi through a canal and by that route to Europe?

A. I think, sir, that with the improvements, of which I speak, in the Mississippi River, with plenty of water, even the spring-wheat could be moved cheaper to Europe by the way of the river than it can possibly be by that route, because a large portion of it would have to be gathered in by railroad, and then go through both canals and down the Saint Lawrence River. Large cargoes cannot be carried there.

Q. Let me examine that proposition a moment. Must spring-wheat be gathered by railroads any more to be sent across from the Mississippi to the lakes than to be sent up or down the Mississippi River?

A. No, sir.

Q. It is precisely the same thing, is it not?

A. I should think so, sir.

Q. Then why do you include that element?

A. I did not include it especially. I will put that as an additional element to the Mississippi also.

Q. It is precisely equivalent in each case, is it not? When you once get the grain to the bank of the river, what you have done is identical whether you intend to send it across the river, or up or down the river, is it not?

A. Yes, sir; but there are several elements in that calculation.

Q. Such as—

A. A large proportion of the wheat that is grown in the Northwest is grown west of the Mississippi River; hence the railroad transportation to the Mississippi River would be shorter and should be cheaper than railroad transportation, say, for three or four hundred miles west of the Mississippi River, would be clear through to the lakes.

Q. Won't you state that again?

A. I will. I state that a large belt of the spring-wheat country is west of the Mississippi River. It would cost less to bring that wheat by rail to the Mississippi River, say, a distance of one to three hundred miles, than it would to take it from the point of production west of the Mississippi River, clear across the Mississippi, and on to the point of shipment upon the lakes.

Q. By rail?

A. By rail; yes, sir.

Q. Now, you see you have forgotten entirely the basis of my question, which was this: Suppose you make a water-route from Prairie du Chien to Green Bay, thus connecting by water the Mississippi River and the lakes. That was the basis of my question. In response to that you include among other things the expense of gathering the grain at the water by rail. My suggestion to you was that that expense by rail would be absolutely and inevitably identical, whether after you have assembled your grain on the bank of the river you intend to send it up or down by water, or across to the lake by water. And in that regard my suggestion is true, is it not?

A. I did not take into account that you were going to have the canal through to the Mississippi River.

Q. That is the whole basis of my question. I understood you to say, that, in your judgment, the solution of the whole transportation problem, as to grain, spring-wheat included, although you did not specify

that, was to improve the Mississippi River, and make a canal at the delta of that river, so as to give facilities, at all times, to sea-going vessels.

A. I claim that.

Q. Very well. Now, by way of testing that, I asked you whether you thought that the article of spring-wheat, for example, the center of whose region you fixed at a point seventy miles below Prairie du Chien, could, in your judgment, be carried to Europe cheaper by the artificial canal at the delta of the river, than it could were it taken by water right across from Prairie du Chien to Green Bay, and so on by the open navigation of the lakes, down the Saint Lawrence to the sea?

A. Well, your proposition, to begin with, is not a fair one, because you know that the lake and your canal, if you dig it through to Prairie du Chien, would be frozen up five months in the year.

Q. It would not be frozen up at the time I was talking about, because if it was frozen up there would not be any point in the question. Now you observe that my proposition is not a fair one. I take no exception to that, but, if you will bear in mind, first, that I am talking about water and not about rail, which you did not do before, and second, that I am talking about the canal when it does operate, and not when it does not operate, I think the proposition will be fair enough to demand of you an answer, which I have not yet obtained.

A. It would be fair during the time when it was not frozen up.

Q. Of course I am not talking about the time when it is frozen up, because, at such a time, what I have been supposing could not have taken place; therefore, I am speaking of the time when it is open, and when the two transits could take place, and I ask you whether, in your judgment, it would be cheaper to take spring-wheat from Dubuque down through the improved Mississippi, and through the canal to be dug in the delta of the Mississippi, and so to Europe, than it would be to take it through a canal dug seventy miles above Dubuque and right on down the open lakes and the open Saint Lawrence to the sea, and thence to Europe.

A. Yes, sir; cheaper, taking it the year round.

Q. I am not talking about the year round, because there is a part of the year when you could not take it by one route at all, and perhaps there is another part when you could not take it by the other. I am taking an occasion when you could carry it optionally by either route. I am not equating time and distance and getting up doctrines of equivalence in the same. I am speaking about a specific proposition, contrasting the two routes, and, if you have an opinion about that, I would like to hear it.

A. I told you that, during the time that it could be moved by the canal, I did not think there would be a great deal of difference; although, during that time, when this canal could be used, we would have high water usually, especially in the spring-time, down the Mississippi River, and of course wheat could be then transported much cheaper than it could later in the season when there was low water; so that there are several elements to be taken into account.

Q. Let us examine one or two of these elements. The low-water months are the summer months, are they not,—June, July, August, adding September?

A. The low-water months are generally later than that.

Q. Name the low-water months.

A. Our highest water is generally in June. The lowest-water months

are generally beginning about the first of September. September, October, November are our low-water months.

Q. Is that the statement of low water as given in your report?

A. I think so, sir. If we ever have an overflow in the Mississippi it is in June.

Q. You name now three months of low water?

A. Yes, sir; of exceedingly low water.

Q. During those three months of low water the northern route of which I am speaking would be especially the favorite, would it not, inasmuch as low water does not affect the lakes, the ocean, or the Saint Lawrence?

A. I think it would for those months of low water, until frozen over.

Q. Then we have there a quantity and some in favor of the northern route. Now, during the time when this route would be favored in the hot weather, you would be here afflicted with low water and with the danger, if there is any, of climatic damage to the grain, would you not? It is in the hot season rather than otherwise that you run a risk of heating grain in warm latitudes, is it not?

A. There is a little more risk in heating grain in a warm latitude, but corn will heat anywhere in the summer months.

Q. Let me make you understand my question. You do not say that there is any danger of heating grain in the Gulf of Mexico?

A. It has not been our experience.

Q. I have not assumed that in my question. I say, whatever danger there be in that regard, if any, is greater in the warm than in the cold season, is it not?

A. I should think so, sir.

Q. Then that would be in favor of the northern route, would it not, in the summer months?

A. Yes, sir; speaking of spring-wheat. That is what we are talking about now.

Q. Yes; so that, in respect of the low-water season and of the warm season, there would not be any disadvantage to the northern route, would there?

A. Not that I am aware of. I have not examined it. I do not know what it will cost by that route. I know about this.

Q. Now, assuming that, and coming to the naked matter of cost, in dollars and cents, is it your judgment that the difference would be in favor of the northern route, or of the transit down to the mouth of the river and through the Gulf to Europe?

A. I have never seen any figures as to what it will cost in that way.

Q. So that when you say that this suggestion here would be a solution of the whole question, you do not speak in the presence of minute review of this northern scheme?

A. When I made that assertion, I made it as a general one, and I take into account that spring-wheat is only a very small cereal production of the Mississippi Valley.

Q. Well, we will take another larger production. But, first of all, is corn or spring-wheat most likely to heat in bulk?

A. I think that corn is.

Q. It is a good deal the most likely, is it not?

A. Yes, sir.

Q. Where do you fix the center, along the Mississippi, of the corn-raising region, speaking now of that corn which is raised for foreign markets?

A. That is simply a matter of opinion with me, not having thought of it before.

Q. O, yes, I suppose it is all more or less inexact.

A. I should think that the center of the corn-growing region, counting the production of Ohio, and of Indiana, of Kansas——

Q. But Ohio, if you will pardon me, is not on the Mississippi River.

A. It is tributary to the Mississippi.

Q. Yes, but the Ohio comes into the Mississippi a hundred and fifty miles below the point which we set.

A. True enough. You are speaking, I believe, of the center of the corn region of the Mississippi Valley. Fixing it as a point on the Mississippi River, I should think it would be south of Quincy, Ill.

Q. How far is that above here?

A. About a hundred and forty miles.

Q. Now, speaking of the corn which is shipped by the Mississippi direct, when it is shipped at all on the Mississippi, and not of that which comes down the Ohio, striking a hundred and fifty miles below here, where do you say is the center of the corn-growing region?

A. I do not think it would vary a great deal, because Kansas and Nebraska are laying west of us, and——

Q. How far is Quincy below Dubuque on the river?

A. It is about forty-five miles below Keokuk. Dubuque is about four hundred and some odd miles from here, I think.

Captain MASON. Dubuque is about three hundred and fifty miles above Quincy.

Mr. STANARD (to Captain Mason.) How far is Dubuque from here?

Captain MASON. It is less than three hundred from Dubuque to Quincy.

By Mr. CONKLING:

Q. What do you count the price of this cheap river-navigation—the cost per bushel of carrying corn from Quincy? That would be three hundred miles.

Mr. STANARD. Do you mean up or down the river?

Mr. CONKLING. I mean from Quincy to Prairie du Chien.

A. It costs very much more for a short trip than it does for a long trip, in transporting, because the cost of handling is the same for one as for the other.

Q. It would not cost any more for a short than a long trip, if it was billed through? In other words, if the same boat in which it is taken to Quincy could go right through to the Welland Canal, the shortness of the trip from Quincy to Prairie du Chien would not——

A. It would cost more than it would if that boat was going eight hundred miles, instead of three hundred and seventy miles.

Q. I am taking the case of the same barge going to be towed right through into the lake, and, therefore, the shortness of the route does not come in.

A. O, no, if she was going right through the canal; but, then, that is not a possibility. Probably it is not. It might be.

Q. We will not differ about that. Will you state what you think would be the fair price of carrying the corn that three hundred and seventy-two miles?

A. I really do not know; six or seven cents. Six cents perhaps with good navigation—plenty of water.

Q. Now, take that same case. I suppose it could go up with just as little water as it could come down?

A. Yes, sir; it would go slower.

Q. As to that corn, the center of production of which you have fixed at Quincy, do you think it would be cheaper to carry it down to the Mississippi, to the mouth of the Mississippi, and so to Europe, than it would be to ship it at Quincy, take it to Prairie du Chien, through the canal there, and tow it right down to the Welland Canal, and so to sea-going vessels?

A. I think it would be dearer that way than it would be the other.

Q. How much a bushel do you think the difference would be in favor of the mouth of the Mississippi?

A. I have not figured as to what the cost is going to be for putting it through the canal, or the cost of canals, and I do not know the distance either.

Q. You figured what the cost was going to be of these improvements from here down, and of the ship-canal?

A. I have something of an idea.

Q. What do you say the cost would be per bushel of passing it through the ship-canal at New Orleans?

A. I have not figured as to what would be the cost.

Q. And you have not figured as to what would be the cost of the Prairie du Chien Canal?

A. No, sir; I have not.

Q. Then it is as broad as it is long. Is there any reason why passing through a canal should be any more expensive at Prairie du Chien than it is at the delta of the Mississippi?

A. It appears to me that the Government would take into account the cost of the construction of the various canals.

Q. How much would the ship-canal at New Orleans cost?

A. The Government engineer reports that it will not cost over six millions of dollars. Mr. Howell is the engineer in charge there.

Q. How much is the canal at Prairie du Chien estimated at?

A. I have never seen an estimate of it.

Q. So that, in other words, you have no mode of contrasting these figures?

A. No, sir; I have not.

Q. Assuming that the canal lockage and canal handling was the same in the two cases, do you think then that cheapness would be in favor of the mouth of the Mississippi route?

A. I do, sir; if we have the necessary improvements on the Mississippi River.

Q. Can you give the reason for that?

A. I judge very largely by the cost of sending grain from Chicago and from Milwaukee, by the way of the lakes, to Buffalo, and from thence through the Erie Canal to New York.

Q. You observe that I have not said a word about the Erie Canal. I have expressly excluded that. I am talking about the lakes and of the river Saint Lawrence, and expressly avoiding the Erie Canal.

A. I observe that, but I say I base my judgment on the present cost of taking grain through the lakes, and through a canal to New York.

Q. How does that aid you, if you have a canal at New Orleans, and, in the other case, a canal at Prairie du Chien, and I have supposed that the two canal expenses are precisely the same; how does it then aid you to consider the cost of further canal navigation, when there is no further canal navigation?

A. I think my answer to that question was—it seems to me to be understood.

Q. I do not understand it, sir. I do not see how you judge of the cost of carrying on the lakes, or the river Saint Lawrence, by taking the cost of carrying through the Erie Canal, when it is not proposed to carry that way.

A. But a very large proportion of this transportation now to New York is not through the canal. It is around the lakes, and I know what the cost is now through the lakes and canal, being water communication clear through.

Q. I see your idea. Now, let me ask you about that. Is the navigation cheaper per bushel on the Mississippi River than on the lakes?

A. It is not, sir.

Q. Well, then, that does not aid a great deal.

A. I will tell you how that aids, sir. It is not cheaper than it is around the lakes. From Chicago to Buffalo is the cheapest water transportation that I know, for the distance. That is, their possibilities, as has been shown by their freight tariffs, are the lowest, although the actual transactions are not cheaper. I have shipped corn from Chicago to Buffalo at 5 cents per bushel. It has been carried as low as 4 cents, but the tariff now is 14 cents per bushel from Chicago to Buffalo.

Q. That is a thousand miles?

A. Yes, sir. It costs on an average from Chicago to New York, including canal transportation, about 24 to 26 cents per bushel. Now, the reason of my argument, that this other is going to be cheaper than this, is, that we have already shown here by Mr. Haarstick, in answer to the questions of Mr. Sherman, that a bushel of grain can be taken from Saint Louis to New Orleans, by improved navigation, at $7\frac{1}{2}$ cents, and from New Orleans to Liverpool, at 20 cents a bushel, and arguing from that stand point, I say it is going to be the solution of the transportation problem, not that I or anybody else here expects that we are going to carry all this stuff, but it will give additional transportation to the country, which is much required.

Q. Have you taken the trouble to calculate the difference in miles from Quincy, for example, up the mouth of the Mississippi, and so to Liverpool?

A. How is that?

Q. Do you know the difference in miles between going to Liverpool from Quincy *via* the mouth of the Mississippi, and going across from Quincy to Prairie du Chien, from there to Green Bay, and so on down, and thence to Liverpool?

A. I do not.

Q. Do you know within five hundred miles how the two routes compare in distance?

A. I do not know that I could state; I should think that the shorter route to Liverpool would be by the way of Montreal.

Q. Can you tell within five hundred miles how much the shorter?

A. I cannot.

Q. Can you tell the comparison of the two routes, as to the time it would take to go from Quincy to a canal at Prairie du Chien, across to the lakes, and so on, down the Saint Lawrence to Europe, and to go from Quincy down the Mississippi River to the Gulf of Mexico, and thence to Liverpool?

A. I think the time would be in favor of the Mississippi route, with a fair stage of water, because there is a current that would allow the cargo to go along very rapidly to New Orleans.

Q. How do you think it would be after it reached New Orleans?

A. After it left New Orleans of course there is fair sailing on the high seas.

Q. But how as to the time, which is another way of measuring distance? What is the time of going from New Orleans to Liverpool, as compared with going from Portland to Liverpool?

A. I do not remember the exact distance from Portland to Liverpool. It is about five thousand miles from New Orleans to Liverpool. I suppose it practically takes about twenty days for a vessel to go from New Orleans to Liverpool.

By the CHAIRMAN:

Q. A sailing-vessel, do you mean?

A. A steam-vessel. Sailing-vessels make it in thirty days.

By Mr. DAVIS:

Q. I notice your statement gives corn. Do you ship wheat also, in the same way, around by New Orleans?

A. Yes, sir.

Q. To what extent are you shipping now?

A. There is very little bulk grain going now.

Q. Well, either bulk or sacks?

A. There is very little shipped. There is very little foreign grain being shipped at this time, by the way of New Orleans.

Q. Was there any other grain shipped between the dates which you give us here, of February and August, or do you give us the entire cargoes that were shipped?

A. Those vessels, generally, at New Orleans, take about half their cargo in cotton, and the other half in bulk-grain.

Q. Perhaps I did not make myself understood. To see whether there was any damage or not to grain, I wished to know whether there were any other vessels which left New Orleans with grain between the dates which you gave us here, between February and August?

A. None that I am aware of. There might have been a good many. I do not know.

Q. How did you get that list?

A. Those were shipments that were reported from New Orleans. If you will turn to corn, you will see those are a line of shipments which we took, say, during the summer months.

Q. They are from February to August, I notice.

A. Yes, sir. There may have been more, and there may not have been; I am not posted as to that.

By the CHAIRMAN:

Q. Those are the ones reported here, as I understand?

A. Yes, sir. This season there has been no large amount exported.

Q. Is it probable there were others shipped and these selected?

A. It is not probable.

Q. It is not.

A. No, sir. We intended to give you a fair statement of that whole business.

Q. What proportion of grain from this market now finds its way to eastward markets, by rail and by water.

A. A large proportion of the grain which comes here—of the wheat I mean, especially—is manufactured into flour. We manufacture three million barrels of flour here. A large proportion of the corn and oats which comes here either comes for city consumption or is sent all over

the southern country. We have a very large Southern trade, through the interior of all the Southern States.

Q. The object of my inquiry was to know the grain that was shipped to other markets than your local markets—what proportion went by water and what by rail?

A. Do you mean South?

Q. In any way. I do not mean, now, your local markets, but grain going anywhere to the markets of the Atlantic.

A. As I said before, a large proportion of our grain, except that manufactured into flour here, finds a market in the South. Part of it goes, say, to Vicksburg or Memphis by river, and is there distributed by railroad throughout the South. A great deal of it is shipped direct by railroad from here to Georgia, Alabama, Mississippi, Louisiana, going over the short-line road, over the Iron Mountain road, striking the Mobile, and the Ohio, and the Mississippi Central, and Jackson and Tennessee roads, and there distributed over the South.

Q. Still, I desire to know what proportion of grain that goes to market from this market goes down the river or goes by rail eastward?

A. A large portion, as I said before, goes South.

Q. What is that proportion?

A. I cannot tell the proportion, but it is a very large one.

Q. What is the rate now to New York by rail, from here? You have a regular rate, I believe?

A. Yes, sir. It is upon flour a dollar and thirty cents per barrel; grain, 65 cents per hundred, which would be practically about 38 cents per bushel. Thirty-eight to forty cents on wheat and corn, there being a difference in the number of pounds.

Q. What is the freight to Baltimore and Philadelphia?

A. The freight to Baltimore is 55 cents a hundred, and to Philadelphia about the same. The rates are less to those points than to New York and Boston.

Q. Have you information which you can give us as to the commerce of your town; I mean the general commerce of the town, and also river?

A. We have given you our receipts of produce in this statement, our tonnage, &c.

Q. Other cities have given us their general commerce. Cincinnati has given the commerce of the Ohio River. We should like to know the commerce of the Mississippi, if it could be furnished, in order to make some general comparisons between rail and water.

A. I think it can be furnished to you.

Q. Can you also give us the general commerce of the river, between here and New Orleans, and so on up?

A. Do you mean the value of vessels and value of cargoes, which have been transported during the year?

Q. I mean tonnage transported for any given year along the line of the river, and the different points to which it went.

A. Yes, sir; I think we can approximate to something which will be satisfactory to you.

By Mr. NORWOOD:

Q. Do you not ship a great deal of grain and flour across the equator, from the mouth of the Mississippi River?

A. A good deal.

Q. In other words, have you not another market beside the Atlantic coast and Liverpool?

A. Oh, yes; and, by the way, there is a gentleman here present from New Orleans, who can post you very thoroughly upon that subject.

Q. I desire merely to obtain the general statement.

A. I think there is a gentleman here who can give you the exact exports to other countries, from the mouth of the Mississippi River, which I cannot do.

Q. Would it not, or would it be much cheaper if the Mississippi were improved and a canal cut, such as you have been speaking of, to ship grain and the products of grain from this region to that market, than by the lakes around and then to that market?

A. O, of course, sir. I think there is no doubt about that.

Q. Then, so far as that portion of the products was concerned, there would be a great saving to the producer?

A. Yes, sir.

Q. The lakes and water communication both, as I understand, are closed about five months during the year?

A. Yes, sir; I understand so.

Q. During that time the railroads put up their rates?

A. Yes, sir.

Q. State what advantage it would be to the producer by having a market that he could reach any month in the year, over one which he could only reach any month during seven months.

A. He would have an infinite advantage.

Q. State what those advantages would be as they may occur to your mind.

A. To the producer of wheat or corn, how much the damage would be, his being confined in mid-winter in the Northwest without being able to ship his stuffs, I cannot possibly say, or how much he would gain by having an open market, but the advantage certainly would be very great.

Q. Does not this advantage arise, that when he has a market the year round he can make his choice of time to sell?

A. Yes, sir.

Q. And in that way he is not forced to come to market, and can command a better price?

A. Yes, sir.

Q. Is not that, then, an advantage over a line that is not open during the whole year?

A. It is, sir.

Q. Again, does or does he not desire an advantage by having a means of transportation which is open during the year, so that there is no press at any particular period of the year, when rates are put up on him?

A. Yes, sir. If there are a hundred millions of bushels to be shipped in six months he would have to pay a very much larger rate of transportation, than for a hundred millions of bushels to be shipped in twelve months, it seems to me.

Q. If he could ship as cheaply by lakes through a canal from Prairie du Chien to Lake Michigan, and on to the Atlantic, as he could ship by the Mississippi, through that canal, to a foreign market, would or would not the difference in the rates of freights, where he has a communication open the year round, be an advantage that would be very profitable to the producer?

A. Very.

Q. In your opinion, would or would not that counterbalance the other matter, as between those two lines that might be put on a par?

A. I think it would very largely counterbalance it. It would counterbalance it if there was any.

Q. Of course, you assume that shipment by either line is equally safe to the cargoes, not only from the perils of the sea, but also from the climatic effects?

A. Yes, sir.

Q. Does it make any difference in shipping by water in the month of June, or in the months of July and August, whether you ship by the lakes and by canal-boats, or whether you ship by the river, and then by the ocean vessels? I mean in the climatic effect. Is there any difference as to the climatic effect upon grain, corn, or wheat that is shipped by water during the hot months of the year? In other words, is it not just as hot in that latitude in June, and July, and August, as it is shipping by the river?

A. Yes, sir.

Q. Then is there any difference in the climatic effect upon grain shipped by water, it matters not whether it goes by canal or by lake, either on that line or this? Is there any difference during those six months in the climatic effects upon grain which is transported by water, all other things being equal, of course, if the boats are equally good and do not leak, &c.?

A. At the same temperature, or the same indications of the thermometer, I think there would be no difference whether the grain be north or south, except that there is a little more humidity in the atmosphere at the south, and it might affect it to a disadvantage; but that, in shipping grain, is very largely overcome, and sufficiently corrected, so that no damage accrues in my experience by the transfer several times of the grain. Wheat or corn arrives in New Orleans, and is taken out of the elevator, and, of course, gets aired. It is then thrown back again, in the course of a day or two, into a vessel, and gets aired again.

Q. Where is that?

A. In New Orleans. The same thing is the case, shipping in the north largely. But the climatic difficulty in my experience is not a difficulty if the grain is sound when it is shipped. Grain that is damp in mid-summer, along in the summer months, will spoil anywhere.

Q. Or when it is gathered before it is entirely ripe?

A. Yes, sir; in the germinating season, it is just as natural for corn or wheat to sprout and grow when getting a little moist as anything that is natural. But if corn is sound it will go by either route safely. If it is damp when it leaves the cribs, it will go into the market bad, come over either the northern or southern routes.

As far as wheat is concerned, it is not affected by the atmosphere and does not get unsound—not nearly so much as corn. If it has a fair show at all it will be sound during the year, if you do not throw it into the river.

Q. You said there was more moisture by the southern than by the northern line?

A. Yes, sir; but I think not sufficient to damage the crop.

Q. Before the grain reaches the Atlantic, or the Gulf, do you think there is more moisture on one line than the other, taking into consideration the heat and evaporation on the lakes?

A. That is simply a matter of opinion.

Q. I am speaking of these months during the heated term?

A. I do not know that it is so during the heated term. But in the South it is usually considered that there is more humidity in the atmosphere. But I believe that the humidity now is later in the season, usu-

ally. That has been my experience in that country, because when the sun pours down pretty hot, it burns up anything of that kind.

Q. Do you think there is no humidity there during June, July, and August?

A. It was my impression that that was the case. I may be mistaken. It is simply a matter of opinion.

Q. I am speaking now upon the water-lines. I am not speaking of the country at large. Of course we know the atmosphere farther north is dryer, but I am speaking of the water-lines, and of course the effect of humidity arising on these water-lines upon the grain transported by them.

A. I cannot tell you whether it is more north or south. Of course grain in water will be pretty damp, and there is a good deal of humidity about it, whether in the frigid or torrid zone.

Q. You think, then, there would be from the action of the sun more moisture upon the Mississippi than there would be upon the lakes?

A. There might be in the extreme southern part, but I am not sure on that point. It is simply an opinion that I throw out incidentally, as I desire to be fair in anything I may say.

Q. Are they not in the habit of kiln-drying grain on the northern lines in order to keep it from spoiling?

A. Very largely. We have not done that very much. We are usually careful to see that the corn is in good condition before it is shipped, and prudence would indicate that it should be in good condition either in a southern or northern market, because a large proportion of the corn going to market by the Erie Canal, or northern route, goes damaged, and corn in elevators, north and south, if it lies long, will get warm.

By Mr. DAVIS:

Q. I noticed that you were the chairman in preparing this report. Did you consider at all what is known as the central water-route by way of the James and Kanawha Rivers?

A. That matter was not discussed before our committee.

Q. Have you given any attention to it?

A. I have given some attention to it, sir.

Q. Have you anything to say on that point?

A. I have not given the matter attention enough to give a matured opinion, for the judgment of the committee. I have felt favorable, however, from the information I had, toward that route. I did not know how much it was going to cost the Government; and to tell you the truth, I have not given it that attention which I intend to.

Q. Your committee did not consider it at all, I understand?

A. We did not.

Q. From what information you have of it you are favorable to the route?

A. Yes, sir; I think it is generally looked upon favorably in Saint Louis. We are not fighting anybody, gentlemen, either the Georgia Canal, the Welland Canal, or the Kanawha or James River route. We simply desire enlarged facilities.

Examination of R. T. VAN HORN of the Board of trade of Kansas City:

Mr. Chairman, I will state that our board of trade have simply grouped the facts and interest of our section of the country, as will appear when I read from the pamphlet which they have prepared.

THE NEW WEST—ITS RESOURCES, AGRICULTURAL INTERESTS, COMMERCE, AND TRANSPORTATION NEEDS.

BOARD OF TRADE ROOMS,
Kansas City, October 25, 1873.

To Hon. William Windom, and Members of the Committee of the Senate of the United States :

GENTLEMEN : The board of trade of Kansas City desire to represent to your committee the needs of the country comprehended, by its commerce in marketing the products of its soil and receiving the merchandise consumed by it in exchange.

The country in question is new to the commerce of the Union—its importance dating from the close of the late civil war—its population in that time having increased at a moderate estimate one million in number.

It embraces Western Missouri, Western Iowa, Nebraska, Kansas, Colorado, the Indian Territory, Northwestern Texas, and New Mexico—covering twelve degrees of latitude, sixteen degrees of longitude, and comprises an area of more than 600,000 square miles.

This vast district of country has but one navigable river—the Missouri—and its lines of commerce are thus exclusively by railway, except the limited margin on either side of that river.

The system of railway construction for this interior region—the geographical center of the United States and of the continent—is, so far as the great trunk-lines are involved, very far advanced, and are concentrated at the mouth of the Kansas River, the nearest and most available point for all the country to the navigable waters of the Missouri River, as you will see by the map.

The agricultural portion of this part of the Union embraces the portions of Missouri and Iowa referred to, the States of Nebraska and Kansas, and the Indian Territory, and is of a more uniform character in quality and production than any equal area on the globe. The soil is of exceptional fertility, and the official report by the census of 1870 shows it to embrace the largest and most productive corn and winter-wheat area in the world.

It also embraces the only natural pastoral region in North America, where, from time beyond the knowledge of this continent, have been subsisted the countless herds of aboriginal cattle, exceeding in number the domestic herds of the globe. These are now being supplanted by the cattle of civilization. The present season has brought together for market, at the several points in Kansas, on the feeding-grounds of the Kansas City stock-market, over \$7,000,000 worth of grass-fed cattle alone.

In addition to this, a careful computation from the crop statistics of the census of 1870 shows that, for the year ending June of that year, there were produced in this region 26,452,116 bushels of wheat ; 631,353 bushels of rye ; 89,236,854 bushels of corn ; 24,367,214 bushels of oats ; 1,429,946 bushels of barley ; 1,856,138 tons of hay ; 6,235,366 pounds of tobacco.

In live stock it produced : Of hogs, 2,596,185 ; cattle, other than exclusively grass-fed, 533,833 ; of grass-fed, 2,061,343, exclusive of the Indian Territory, where there are large herds, but from which there are no returns ; of mules, 116,585 ; of sheep, 2,233,326 ; of horses, 835,833.

The value in soil-products of the amount produced by these figures, at the current market-rates paid at Kansas City this season, would amount to \$85,228,837. And the live stock, at a low average per head, are in value \$26,557,630.

Or, in the aggregate, this portion of the Union produced, in 1870, from its soil alone, a wealth of more than one hundred and twenty-eight millions of dollars.

A country thus productive, and which has become so practically within seven years, and which has seen its three most productive years since the census-figures were obtained, is, we most respectfully submit, entitled to be heard on a question so vital as that for which your committee was raised to inquire into and report upon—transportation.

And we approach this part of our subject with the statement, that, as compared with other portions of the Union affected by both the foreign and domestic market, it is practically cut off from both, and, in times of abundant crops, its products do not admit of shipment with profit to the producer ; only when prices are high, induced by failure of crops east of the Mississippi or in Europe, or both, can its grain be profitably transported to the Atlantic sea-board by present facilities.

From Kansas City, the converging-point of the principal great trunk-lines to New York is, by rail, fourteen hundred miles, being nearer to that city than from any point on the Missouri River above the mouth of the Kansas, and, for this reason, taken as the standard of computation.

Taking the rate of transportation by rail, as we find it in the documents printed by Congress, to be twelve and a half mills per ton per mile, we find that the cost of a bushel of wheat of 60 pounds from Kansas City to New York would be 52½ cents, or 87½ cents per 100 pounds for all products.

This we may assume to be the rate by all rail, and for our corn and pork, which come into market after the close of navigation, rail transportation is our only dependence. As to corn, it is quoted the day on which this is written in New York at 58½ to 60 cents per bushel—leaving to the farmer, the shipper, and for all expenses getting it in the car at Kansas City, a margin of 6 to 8 cents. Is it strange that it is burned for fuel to save the destruction of timber; and cheaper than coal at cost of mining and delivery?

It is unnecessary to lengthen the argument by parallel illustrations as to other products, as this one affecting our great staple is sufficient—everything being governed by it.

NATURAL OUTLETS.

But these disabilities can be remedied. They are artificial, and result from causes which are susceptible of remedy, and which have been in great part removed by private and corporate enterprise.

And we are before your committee to-day because it is proposed to devise a general system of relief for the whole country, by opening up cheaper channels of transportation by the common fund of the nation; and because what is needed in this respect by us can only be done under national authority.

There are two outlets for the products we have referred to: One by way of the Missouri and Mississippi Rivers; one by the harbor at Galveston, Tex.

BY GALVESTON HARBOR.

We shall consider them in the reverse order in which they are mentioned.

From Kansas City to Galveston it is now eight hundred miles as the railroads are constructed, but which can be reduced within seven hundred miles—or just half the distance to New York. It is, as to cost of transportation, as if Kansas City was removed east to Columbus, Ohio. The question as it addresses itself to us is:

“Why should Kansas City, and the country surrounding it, with its one hundred millions of annual production, be compelled to seek the market through Columbus, Ohio, any more than that Columbus should be compelled to seek her market by way of Kansas City?”

If the port of Galveston was made accessible for ocean-going vessels, the wheat and corn of the Missouri Valley could seek the ocean at 26½ cents per bushel, and pay the same rate it does to-day to New York at 52½ cents—adding a quarter of a dollar to the price of the 115,000,000 of bushels of these crops, produced in 1870, or more than \$25,000,000 to the farmers of this New West every year.

Then the country embraced in this central portion of the nation would be, as to foreign markets, as favorably situated as the States of Indiana and Ohio, and our rich lands increased in corresponding value.

And why the national treasury should not improve this harbor equally with those of the lakes and Atlantic seaboard is, we submit, not a question for discussion. Its need is all that requires to be established. And this we feel our illustration and the facts recited most conclusively establish.

BY THE MISSISSIPPI.

The other outlet for the Upper Missouri to the markets of the world is by the Missouri and Mississippi Rivers.

There are two questions to be considered in connection with this route:

The navigation of the Missouri River by barges, its seasons of low water and ice, and the low water and ice in the Mississippi River above the mouth of the Ohio;

And a connection by railway with the Mississippi at a point below ice, and at permanently deep water.

The cost of shipping grain, per bushel, from Saint Louis to New Orleans may be fixed by present facilities, at a high stage of water, at 8 to 10 cents. It may be brought to a lower minimum, but we prefer to be within actual figures, as demonstrated in practical transportation.

At present, as the channel is in the Missouri, it would require lighter tonnage in vessels, and thus the cost be somewhat enhanced over the same distances in the Mississippi. We depend entirely upon conjecture when we put the cost from Kansas City to Saint Louis, by barges, at about the same figures, or in all about 16 to 20 cents per bushel from Kansas City to New Orleans.

This would be a saving to ocean ports, over the present rates to New York, of 32½ cents for all grain for European demand, and of 22½ cents to New York itself, counting 10 cents from New Orleans to New York.

We know it is claimed, and we believe within the limits of practical demonstration, that these figures can be materially reduced, but we prefer to take what has been done,

as it is ample to command consideration, leaving to the future and mutual enterprise to reduce the cost by both routes ; the point we desire to enforce being the relative cost between the two, both being susceptible of further cheapening.

The Missouri River has not been tested by being navigated by grain-barges in tow of steamers, as has the Mississippi between Saint Louis and New Orleans. It is believed by practical men that it can be so used successfully, and we have so considered it in estimating the cost of transportation. But frankness requires us to say that it has yet to be demonstrated.

But, conceding that it is so, it is insufficient as an outlet for the products of the vast area of country dependent upon it. And for these reasons:

From August until the close of November is the low-water season, when the channel contains but from $3\frac{1}{2}$ to 5 feet of water.

From the last week in November to the middle of March, navigation is suspended by ice. True, in some seasons the interruption from this cause is more brief, but there is no safety within that period, and even by steamboats is seldom attempted until the freezing season has entirely passed. And above the mouth of the Kansas River, the obstruction from ice is often some weeks later.

Thus the season of good navigation in the Missouri may be included from April to August—at its best, after the annual rise in June.

Our corn-crop is never ready for shipment until after ice has closed the river, and our pork-crop, made from it, necessarily so, as well as most of the beef, although a portion of this can go forward before ice is formed. The wheat, in part, may go before the close of navigation, but so far as the Missouri can be availed of most of our products must lie in store until the opening of navigation in the spring.

The same obstacles await us between Saint Louis and Cairo, both from low water in the autumn months and ice and low water during those of the winter.

The general result arrived at by these facts and figures is, that this central area of the country has a common interest with the whole Mississippi Valley in the removal of obstructions to navigation in the channels of that river and its tributaries, and the removal of the barrier at its mouth, as the cheapest and most available outlet to the markets of the world.

But confined as we are to the one river, the main dependence for gathering the crops and concentrating the products of the agricultural lands for transport is, and for all time must be, upon the railway. And for fully one-half the year we must use the railroad to reach the Mississippi. And to fully utilize that river it must be reached by rail below the mouth of the Ohio, where an open channel and deep water can be found throughout the year.

THE MISSISSIPPI AT MEMPHIS.

Private enterprise has already fixed upon the point for this connection at Memphis and the work of constructing a railroad from Kansas City to that city begun—the first hundred miles being well advanced and work going forward at this time. The importance of this connection, and the aid of your committee and through you of Congress, will be seen from the considerations we present.

From the mouth of the Kansas River to Saint Louis by the Missouri is four hundred miles.

From Saint Louis to Memphis four hundred and fifty miles.

From Memphis to New Orleans seven hundred and fifty miles—or one thousand six hundred miles in all—from Kansas City to New Orleans.

In the season when the Missouri is closed it is by rail to Saint Louis two hundred and eighty-three miles; and from Saint Louis to Memphis three hundred and nineteen miles—six hundred and two miles by rail from the mouth of the Kansas to Memphis—where the permanently open river and deep water is reached.

By air line from Kansas City to Memphis it is three hundred and sixty-five miles, and can be traversed by rail within three hundred and ninety miles—in round numbers four hundred miles.

The Upper Missouri Valley can thus reach the Mississippi River below ice and at permanently deep water by two hundred miles less rail transportation than as now employed by way of Saint Louis.

By employing one hundred and seven miles longer rail transit than at present, four hundred and fifty miles of river are saved, as against the route by Saint Louis; and by employing two hundred and twelve less miles of railway, the same point is reached by all rail, as now. And in both cases the only obstacles now existing are completely and entirely overcome.

This obtained, and uniform freights throughout the year are secured, or, if there is any difference, the winter freights will be lower than the summer, from the fact that the boats that are driven from the upper rivers by ice will seek the Lower Mississippi for winter employment, making tonnage more abundant than in the summer.

Then, with the obstructions at the mouth of the Mississippi removed, or avoided,

ocean steamers could land at Memphis just as freely as at New Orleans, and grain be loaded direct from the elevators and shipped to either New York, Philadelphia, Boston, or to Europe. And the flour made from our winter wheat, equal to any in the Union, be shipped by the shortest route to the West India and South American markets.

It would practically place our grain port within four hundred miles of the mouth of the Kansas, and give us both for export and import the lowest rates, and uniform at all seasons.

Taking the same rates of charges on freight by river and rail, as we have used above, we could by this proposed route place grain in Memphis at 15 cents, in New Orleans at 20 cents, New York at 30 cents, and Liverpool at 35 cents per bushel—or even by rehandling at New Orleans in addition to Memphis, it would only make the cost of our grain at New York and Liverpool 35 and 40 respectively—or a saving over present rates to Europe of 36½ cents for every bushel of the grain of western Iowa, western Missouri, Kansas, and Nebraska.

At this writing grain from Saint Louis to Memphis costs 22½ cents per 100 pounds, or about fourteen cents per bushel. To New Orleans by barge 30 cents per 100 pounds, or 18 cents per bushel. By barge from Kansas City at corresponding rates to those now paid, grain at Memphis would cost 20 to 22 cents, and at New Orleans 24 to 26 cents per bushel.

But with railroad to Memphis to-day, we could save 5 to 7 cents at the rates now charged on the Mississippi River. And this saving would hold good pro rata on any reduction which improved facilities in transportation might give in the future.

It is thus demonstrated, not by presumptive figures and contingencies in the future, but upon actual prices, as paid to-day, that with railway connection between the Missouri River and the Mississippi—at the mouth of the Kansas and at Memphis—the surplus of our annual product of 146,000,000 bushels of grain can find its cheapest and most available outlet to market.

There is another element in this proposed route to which we have not alluded—that of time.

The Missouri River, down stream, is not safe for navigation by night, and has never been used by steamers descending the river—the practice always, and made imperative by the rules of the underwriters, being to land and remain at moorings during the darkness. It would require from three to four days for a fleet of barges from Kansas City to reach Saint Louis, and longer in proportion to distance from all points above; while changing cargo at Saint Louis and thence to Memphis would require eight to ten days' time for our grain to reach that point.

Cars could be loaded at any point on the railroads of the Upper Missouri, or from the elevators at Kansas City and unloaded into vessels or elevators at Memphis in from thirty-six to forty hours, thus adding largely to the profit of shipment—saving a week in time and the high rates of insurance above the mouth of the Ohio and in the Missouri River.

There is but one more proposition in this connection to discuss, and that is the point on the Missouri River at which the railroad connecting with the Mississippi should commence. We have assumed it to be at the mouth of the Kansas River—and for the reasons:

That it is the nearest and most available point for the country in question to reach navigation, as an examination of the map demonstrates;

It has been so recognized by becoming the converging point for the great trunk lines of railway already built and in operation—being to-day the commercial centre of all the country embraced in this memorial;

The Missouri River, below the Kansas, is open for navigation later in the autumn and earlier in the spring, making a month's difference in navigation in some seasons, over points above, and having a larger volume of water, is safer for river craft and heavier tonnage than above the mouth of the Kansas;

And it is the nearest point at which the Missouri River can be reached for all the country west and north—the distance being increased from either above or below, as the map will demonstrate;

And because the construction of this important work has already been commenced, and over one million of dollars expended upon it.

We have thus briefly laid before you the leading facts in regard to the important portion of the common territory of the Union, with which we are bound up in common interests and in common destiny.

We have shown that it produces nearly one hundred and fifty millions of bushels of grain annually.

We have demonstrated that, as a meat and wool producing region, it surpasses any other portions of the United States—and that as yet it is in the infancy of its development in this respect.

We have not adverted to its wealth in iron, coal and lead—for the disabilities under which its agricultural labors are immediate and pressing—but in all these mineral resources it is equal to any portion of the Union.

We have shown that by distance and other obstacles it is practically cut off from the markets of our own nation and the world.

We have shown how by two natural and near outlets it can be placed, as to markets, on a footing with the most favored interior districts of the Union.

And we claim that if so favored, and its products allowed to reach a market, that the effect will be not only beneficial to its own people, but will open up to the industrial masses of other portions an abundant and cheap supply of all the staple elements of food, both now and in increasing volume for all time to come.

The relief then asked by this portion of the people of the United States may be briefly stated :

1. The improvement of the harbor at Galveston, so as to allow of ocean going vessels to land at the wharves of that city.

2. The removal or avoidance of the obstruction at the mouths of the Mississippi.

3. To aid in securing a connection with permanent deep water and permanent freedom from ice with the Mississippi, as indicated by railway from the mouth of the Kansas river to Memphis.

The two first come under the general power of Congress, touching river and harbor improvement.

As to the latter, we can see no difference between connecting commercial points by rail and by canal. And we are thoroughly convinced that, in all the projects submitted to you for the better accommodation of the different portions of the Union, there has been no one proposed conferring so large benefit upon such important interests and so large an area of country that can be afforded at so small a cost to the National Treasury as this.

Were it within the scope of this memorial, or within the purposes for which your committee has been raised, we could demonstrate that what we ask, to thus connect us with the Mississippi, can be fully accomplished, and that speedily, without the expenditure of a dollar in money by the General Government.

And upon a favorable consideration of the matters herein presented, and its recognition by your committee as deserving the attention and consideration of Congress, the method by which it can be thus accomplished will be laid before that body through your committee.

R. T. VAN HORN,

W. H. POWELL,

On behalf of the Board of Trade.

By Mr. SHERMAN :

Question. Is the railroad finished now from Kansas down to Galveston?

Answer. Yes, sir; we go there by rail.

Q. Do you know what the rate of charges are?

A. I do not. There are no regular rates. We have not been able yet to induce the people of Galveston to take hold of our grain crops. I was down there last spring with a committee of gentlemen on that matter, and we could not get them to talk about much else except cotton. They did not seem to understand the actual condition of affairs. It is exactly eight hundred and three miles from Kansas City by the way the rail runs.

Q. There are no preparations made now to receive grain, I understand you?

A. No, sir; and one obstacle in the way is that there are two gauges on the Texas Central Road. That portion of the road constructed previous to the war, up as far as Corsicana, is of the southern gauge 5 feet, and that portion which has been constructed since the war, from Corsicana north, is of the standard gauge.

Q. That compels a transfer, of course?

A. Yes, sir; and for that reason we have not been able to utilize the road. They expect to change that gauge from Corsicana down within the next eighteen months. It will be probably two years before it will be done.

Q. How can Congress aid you in building a road from Kansas City to Memphis? What do you propose? Is there any land grant?

A. No, sir. If Congress would guarantee the interest on the bonds we would make it ourselves and pay the interest too.

Q. That is what you propose?

A. Yes, sir; but it is for you, gentlemen, in your wisdom to devise the mode. We will be content with any favors which you may grant us. We have seventy miles of road bed about ready for rail.

Q. Is there any public land along that route?

A. No, sir.

Q. There is no public land-grant?

A. No, sir. It runs through some public lands.

By Mr. DAVIS:

Q. I understood you to assume fifty-two cents a bushel as the freight from Kansas City to New York?

A. Yes, sir.

Q. What are the actual facts. What is the rate now?

A. That is about corresponding. I took those rates, as we do not ship any grain to New York, and cannot ship, and it does not pay to ship; I took the rates as given and published in a document of Congress by Mr. McAlpin, the engineer of New York, who gave an estimate of what freight costs by ocean transportation, by rail, by river, by canal, by lake—by all the methods employed in this country. I took that as perhaps as near a standard as I could find, as we do not ship any grain from there to New York, and had no rates. In regard to other freights I will have to refer you to General Powell, who pays freight bills, and who is more familiar with it than I am.

By Mr. SHERMAN:

Q. (To General Powell.) What is the freight now from Kansas City to New York City, Baltimore, or Philadelphia?

A. In grain?

Q. Yes, sir.

A. I am not familiar with them at all.

Q. Well, fourth-class rates?

A. Fourth-class rates to New York are, I think, eighty cents a hundred, I believe they were the last I paid.

Q. Eighty cents east or west?

A. Eighty cents from New York west.

Q. Coming out?

A. Yes, sir.

Q. What is it from Kansas City to New York?

A. It is the same rate that is made, and reported in our papers, by the different roads.

Q. Is there no shipment from your country to New York?

A. Yes, sir; meats.

Q. What is the transportation on that?

A. They are making some special rates. Eighty cents is the published rate, but they get a less rate than that on beef.

Q. What is that rate?

A. I do not know what it is; I am not posted about that.

Q. I understood that you had a railroad now from your place to Galveston. What is the number of miles and what is the transportation?

Mr. VAN HORN. It is eight hundred and three miles the way the roads are constructed, using three lines of roads, making the connection by Fort Scott from Kansas City, by the Missouri and Texas through to Dennison, and by the Texas Central from Dennison to Galveston, with the break of gauge at Corsicana.

Q. What is the rate on grain ?

A. We have no rates. It has only been opened about a year, and we have not been able to open a market there because they tell us they cannot handle grain at Galveston, owing to the fact that the vessels cannot get in within a mile or so of the wharves.

Q. In what way does your grain find a market ?

A. We only ship it in the form of flour to Saint Louis and Chicago. What grain we ship generally comes to Saint Louis. Flour goes to Chicago. We ship some flour to New York when the prices are favorable.

Q. How as to corn ?

A. We have not shipped corn anywhere except to Saint Louis, and when we can get a high river and steamboats to take it, we take it. What we complain of is that we have no market—no permanent outlet by which we can market our grain.

Q. What is corn worth now per bushel at your place ?

A. It has been from 25 to 28 cents all summer. It is about 33 to 35 cents now.

Q. What is wheat ?

A. Previous to this panic we had prices which General Powell can state better than I can.

Mr. POWELL. A dollar and a quarter.

Mr. VAN HORN. Remember our wheat is winter-wheat, a large portion of it.

Q. Do you make any shipments by river to New Orleans of pork or beef ?

A. No, sir ; our meats generally go to New York by rail, because the shipment is in the winter mostly, when the Missouri River is closed by ice. We cannot have water transportation at all from the latter part of November until some time in March, and sometimes as late as April. No boats go that far up, because it is not safe.

Q. In considering your outlets for a market, have you taken into consideration the Ohio River and the central water-line ?

A. No, sir. We supposed that that was too far. The Atlantic seaboard, at any place from Richmond up there, is practically too far for us to compete with the other grain-producing portions of the country. We can get to the ocean ports at a shorter distance, and equalize the cost in that way.

Q. State the difference in distance from your place to the capes on the Atlantic by Richmond and also to New Orleans.

A. I could not without a map. In going down stream, if you will allow me to make a bull, a mile is not nearly so long as it is going up stream, either in cost or in time.

Q. Still the vessel has to come back in either case, I believe ?

A. From here to Galveston harbor, where we want to get out, they do not have to come back. In the Mississippi a vessel which can get over the bar at the mouth of the Mississippi, even when deepened 25 feet, can get to Memphis. A steamer from Liverpool can land at Memphis as easily as she can at New Orleans, and that gives us one hundred miles more rail than we have now to reach Saint Louis. It places us at Memphis below ice, and at permanently deep water, where we have uniform rates of freight throughout the year.

Q. If you will examine the route you will find that the route I speak of is several hundred miles nearest in distance.

A. It may be geographically. I do not express an opinion on that. To be frank with you, we have never considered that as a practical outlet for our products. It may be, and we would be glad then to avail

ourselves of it by way of the Ohio River. We are now, however, expressing what we consider our local wants in this matter. We will go by Prairie du Chien if it can be made as cheap by that route. The truth is we have no markets in ordinary classes of products. With the crops in Illinois, Indiana, and Ohio and the northwest it does not pay to ship our products, unless, sometimes, to get flour to market. We have never sought an eastern market until within the last few years since the war, because the western, the mountain, and the Indian trade had always consumed our surplus until since the war, and the immigration and settlements and production of the country have made it necessary for us to seek a market elsewhere. Colorado now feeds herself, and we must find the shortest and cheapest outlet for our own products. We can feed the world with beef—grass-fed beef which nothing can compete with. Our beef crop this year amounts to five hundred thousand head of grass-fed cattle.

Examination of W. C. FLAGG, president of the Illinois State Farmers' Association :

Mr. FLAGG. Mr. Chairman, I will say, in order to prevent misunderstanding, as we are somewhat confused, as is necessarily the case in a new organization, that I am not a granger, technically speaking. We have two organizations, one of which is an open organization, and the other a secret one; the secret one disavowing and preventing so far as they can any political action, but the open one feeling itself entirely free. I belong to the open organization.

I take occasion to say this, Mr. Chairman, because both of these organizations are receiving some blame, and some praise, perhaps, which we do not deserve, particularly from the eastern critics, who confuse the two organizations.

A meeting which was held at Chicago barely a week ago was composed of both of these organizations, so far as they chose to be represented.

I will lay before you, before I get through, the entire proceedings of that meeting, so far as they were reported in the Chicago Tribune, in order that you may have them for reference, if you should desire to see precisely what was advocated by the convention.

By Mr. CONKLING :

Q. When was your organization formed ?

A. Do you mean the one of which I am president ?

Q. Yes, sir.

A. It was organized in January last. There was a preliminary meeting called in October of 1872, by a club in our State of Illinois, at which about nine counties and about thirteen clubs, granges, as nearly as I remember, were present. They elected officers, and appointed a central committee and executive committee, &c., who, after conference by letter, called a meeting at Bloomington, in our State, which was held, I think, on the 16th of January, 1873.

Q. A State organization ?

A. A State organization composed of various agricultural organizations of the State, including special clubs and granges, having for its purpose the advancement of the pecuniary, intellectual, and other improvements of the farmers of our State.

Q. The organization consists of the president, and what other officers ?

A. Of the president, vice-president, from each of the congressional districts, the secretary, and the treasurer.

Q. Then I infer from your statement that officers, as well as members of your organization, are also members of granges, which are those that you speak of when you say that they are not open?

A. Yes, sir. There is also, I will add, a State grange, which is made up exclusively of the members of the local granges—the masters, I think, of the local granges. Those State granges are organized as fast as there are enough granges in the State to make it practicable. I think, perhaps, in about twenty States there are now what are called State granges that are made up from these local organizations. They have also an intermediate organization, to a certain extent—a county grange. That, however, I do not understand to be necessitated at all by their constitution and regulations. The intention is to make a complete organization, from the local to the national grange.

Q. There is one national grange?

A. There is a national grange which is made up, I think, from the masters from the State granges.

By Mr. NORWOOD:

Q. It sits in Washington, I believe, does it not?

A. Yes, sir; it has only held one meeting, I think. This organization was formed, I think, as far back as 1867, but has had only a nominal existence until within the last year or so.

I now have the honor to acknowledge the receipt of your dispatch from Washington, stating that in case the Northwestern Farmer's Convention at Chicago should deem it advisable to favor you with any information or suggestions by delegates or otherwise, you should be glad to confer with them. I laid the communication before them; and a committee of five was appointed to wait upon you and communicate the results of the deliberation of that convention upon the transportation question; as well as such other facts as we might deem important to place your committee in possession of what the farmers of the northwest deem to be the important considerations in this matter.

I. Under the first head—the action of the convention—I have to inform you that the convention adopted the following resolutions in reference to transportation.

That we most respectfully but earnestly request Congress, without needless delay, to pass a maximum freight and passage law, regulating traffic between the States, and our legislatures laws regulating it within the States.

That we demand the construction of railroads and the improvement of water communication between the interior and the sea-board, the same to be owned and operated by the General Government for the purpose of affording cheap and ample transportation and to protect the people from the exactions of monopoly.

The first of these resolutions was adopted with nearly entire unanimity; the latter not without considerable opposition, but the two, I believe, cover nearly the whole ground of discussion. They affirm the necessity, that the National Government should exercise the powers given it by the constitution, but hitherto little used, both to regulate the existing lines of inter-State transportation, in which private parties have an interest, and to build and operate new lines, which it shall retain wholly within its own control.

Both of the resolutions, gentlemen, would have been rejected by any similar body ten years ago. The doctrine of State rights would have been arrayed against both and the teachings of political economists would have been cited to show us how far private enterprise exceeded public surveillance in results. The fact that both resolutions passed a convention in which were numerous representatives of the State rights

and Laisser Faire schools of politics is evidence of the strait in which the farmers of the northwest find themselves.

II. This brings me to the second duty assigned our committee, to lay before you some of the facts upon which the action of our convention was based. I presume you have already listened to the views of the carriers and traders of our inter-State commerce, as well as to the representatives of various schemes and lines of transportation that desire congressional aid. We undertake, so far as we can do so, to lay before you the wants of the farmers of the West. In doing so, while we admit that, like the merchant, the railroad man, and the water-route advocate, we have financial interests to subserve, yet we disclaim any partiality for any peculiar route, scheme, or method of inter-communication. We represent a sparse and widely scattered constituency that cannot and ought not to be rallied in favor of any particular scheme, except so far as it promises a cheap, speedy, and certain transit at an early day. In other words, we claim to be, so far as our information goes, the best, because the most impartial, judges of the routes for cheap transportation. I will now ask your attention to some statements that I take from an address delivered at Topeka in September :

We have here, in the valley of the Mississippi, ten great agricultural States—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin. They contain 600,797 square miles; 78,366,864 acres of which, or about one-fifth, was improved in 1870. They then contained a population of 12,966,930 inhabitants; only about $2\frac{1}{4}$ to the square mile, but already nearly one-third of the whole population of the United States; 2,032,821 of these, or about 53 per cent. of those reported as engaged in occupations, were farmers.

As this comprises one of the most fertile portions of the globe, with a surface of level prairie upon which a larger part than usual of agricultural labor can be done by machinery, you will find that a large aggregate and part of the agricultural products of the country are found within the borders of these ten States. According to the census of 1870 they produced 67 per cent. of the wheat grown in the country; 57 per cent. of the corn; 56 per cent. of the oats; 38 per cent. of the rye; 35 per cent. of the barley, and 43 per cent. of the live-stock valuation. These percentages have been increasing rather than diminishing since; and there is prospect of a great but unknown increase in the future. We cultivated, you remember, but one acre in five of our territory up to 1870.

The estimates of the Department of Agriculture for 1872 show that we produced about 60 per cent. of the wheat of the country that year, and nearly 70 per cent. of the corn. Assuming that 7 bushels of wheat per head are consumed in bread, seed, and waste in the wheat-producing regions, 5 bushels in the non-wheat-producing regions, and 6 bushels in those of an intermediate character, you will find, by reference to these estimates of the Department of Agriculture, that New England was short some 16,500,000 bushels of wheat for bread. The Middle Atlantic States of New York, New Jersey, Pennsylvania, and Delaware had not enough by 24,000,000 bushels; Maryland, Virginia, and North Carolina, growing considerable wheat, were only 4,750,000 bushels short of a supply. South Carolina, Georgia, Florida, and Alabama had not enough by 10,500,000 bushels; Mississippi, Louisiana, Arkansas, and Texas not enough by 12,000,000 bushels. A large deficit, you notice, existed from Maine clear around our Atlantic coast to Texas. The consumption of wheat in the Southern States, being in a much smaller ratio to population than in the North, would diminish the quantities required there, but the fact of non-production is as stated.

To supply this deficit, which amounts in the aggregate to nearly 68,000,000 bushels, we find a surplus of 2,750,000 bushels in Tennessee, Kentucky, and West Virginia; another of 22,500,000 in the Pacific States and Territories, most of which, however, goes to Europe in vessels, and, finally and chiefly, a surplus of 65,500,000 bushels grown in the ten great States of the Upper Mississippi of which we have been speaking.

If the consumption of corn could be estimated with the same accuracy, similar or rather analogous results would be obtained. The average production of corn in the United States in 1872 was 25 bushels for every person of our population. But, with this average, we find that while 53 bushels per capita were grown in these ten Upper Mississippi States, only $2\frac{1}{4}$ bushels per capita were grown in New England; 11 in New York, Pennsylvania, and Delaware; 17 in Virginia and adjoining sea-board States; 20 in the Southeastern States of Georgia, Florida, Alabama, and South Carolina; 25 in Louisiana and neighboring States, and 40 in Kentucky, Tennessee, and West Virginia. The Pacific and Rocky Mountain region, unfavorable to corn-culture, produced only $2\frac{1}{4}$

bushels. So that, with some modifications, the same fact of a great deficit in one quarter and a great redundancy in another reappears.

The fact is a partial result of the pioneer or grain-growing system of husbandry, under which the newer regions grow grain in excess, while the older diversify their agriculture, and tend more to manufactures and other industries. But it is something more. It is the result of physical laws, whose operation is eternal. The humidity and summer-heat of this northwestern region mean corn. It always will be the great home of this most important cereal; and the same remark, though in a qualified and limited sense, is applicable to wheat. The grains can be produced more cheaply, and probably always will be, here than in any part of the country, except limited regions in the mountain and Pacific districts that can excel in small grains.

But these grains, or their products, in the shape of flour, meal, beef, pork, high-wines, &c., to reach these consumers of the Atlantic coast must be transported not less than one thousand miles. The surplus, not a very large one, above home or American consumption, must travel the same distance to reach the seaports. To do this it has the choice of transit from Chicago through the lakes and then down the Saint Lawrence, or through the Erie Canal; down the Mississippi, to which the waters of all these ten States, except those of Michigan, are more or less tributary, and up the Ohio, to cross the country by rail, or still down the Mississippi to New Orleans; or, finally, by rail along several different routes, controlled, however, by two or three leading companies.

The curious feature about these routes is repression of their increase. Between 1860 and 1870 the population of these ten States increased over 42 per cent. The mileage of the railroads within their borders more than doubled, and the production of wheat increased in an equal ratio.

Corn did not much increase, but live stock increased 50 per cent.; hay, .75 per cent.; and other products multiplied. The year 1872 showed the immense production, according to the Department of Agriculture, of 156,228,000 bushels wheat, 693,625,000 bushels corn, 5,563,300 bushels rye, 163,479,000 bushels oats, 10,092,000 bushels barley, or 1,028,987,300 bushels of cereals.

Yet the water-ways to which these local railroads (now increased at the end of 1872 to 28,878 miles) lead have not been permanently or specially improved, and through railroads to the East have not been developed with any corresponding energy. Secretary Randolph, of the Chicago Board of Trade, states that no entirely new route to the seaboard has been built from Chicago for fifteen years. And this in the face of the fact that these ten States, with but twenty-one inhabitants to the square mile, and with but little more than one acre in five in cultivation, have only just begun their work of agricultural production.

You see, now, the situation. Here are immense stores of grain and other farm products; over yonder on the sea-board are the consumers; and in like manner the peculiar products of sugar-planting Louisiana, of cotton-growing Georgia, of coal-bearing Pennsylvania, and of many other States, must go far and wide to reach the consumer. And as transportation adds nothing to the feeding power of grain, the clothing power of cotton, or the heating power of coal, although food, clothing, and fuel are essential to human existence, the public welfare—the good of both producer and consumer—demands that transportation should be cheap. This is the need of the Iowa farmer, compelled to burn his corn for fuel, and of the Massachusetts mechanic, who, although temperate, industrious, and frugal, cannot now support his family. The corn is worth at the station in Iowa, say, 15 cents per bushel, and hence it is burned. It cannot be grown for much under \$1 per bushel in Massachusetts, and cannot be bought for less than 80 cents, and hence the difficulty of obtaining cheap food for the operative. Is this wide margin between producer and consumer necessarily and rightly used in the expenses of transportation, inspection, storage, and commissions? Can it be lessened, in view of its being for the great good of the masses that it should be diminished?

Again, ours is a country of magnificent distances, whose population

is migratory, shifting, and intermixed. It is nearly 3,800 miles from Boston to San Francisco, through Saint Louis, and nearly half that from New Orleans to Saint Paul. It is a wide difference of climate, soil, and productions that persistently affects our population and makes a free and continuous intermovement exceedingly desirable to prevent alienating differences of temperament and thought from growing up and making different parts of the Union hostile to one another. "In America," says Draper, "transportation at the lowest cost assumes the attitude of an affair of the highest state necessity."

The want of the industrial classes, then, pre-eminently, of wise statesmanship generally, I conceive to be the cheap transportation of persons and property throughout the United States. For that we are contending locally in Illinois, against powerful moneyed corporations that, having obtained special legislation and large subsidies of our people, now refuse to obey our regulatory laws. We can and will ultimately settle this matter so far as local freights and fares are concerned, but we are powerless in the States that lie beyond our borders, in the line of our commerce. The same is true of all our Northwestern States.

Here are some facts affecting the matter of cheap transportation, from the point at which we now stand, to which I wish to call the attention of your committee. Here, upon the banks of the great river of the country, we should have, if anywhere, the cheap rates of freights and fares, resulting from the advantages claimed from competition, both of rival routes by water and rail, and from large business.

Taking up the monthly railway guide published in this city, I find a table of what are called "adopted" rates of fare from this city to different points in the United States. The word "adopted" you will notice as significant of one of those conspiracies against the public interest that are not unknown in railway history. I note some of the more peculiar cases. Here are the rates from Saint Louis to San Francisco, mostly over a road to which the National Government has granted enormous subsidies without due consideration. The distance is two thousand four hundred and sixty miles; the amount is \$117.50, or 4.8 cents per mile. To Sacramento, which is one hundred and thirty-eight miles nearer, the charge is the same, or more than 5 cents per mile. To Cheyenne, which is nine hundred and sixty-five miles away, the charge is \$48.50, or 5 cents per mile; while to Denver, which is forty-five miles nearer, it is \$53.50, or 5.8 cents per mile. To Salt Lake City, a distance of one thousand six hundred and fifteen miles, it is \$97.50, or 6 cents per mile, being the highest rate given in the table. This is what roads in private hands, although aided by Government, have done for us.

Take now the cities and towns along the Mississippi and its tributaries, accessible by boats and affording water competition. New Orleans, distant seven hundred and twenty-five miles, can be reached for \$28.75, or 4 cents per mile, by rail; Quincy, one hundred and eighty miles distant, can be reached for \$6.45, or 3.6 cents per mile; and Cairo, one hundred and forty-eight miles, for \$6, or 4 cents per mile. Atchison, on the Missouri River, three hundred and thirty miles distant, can be reached by paying \$13, or nearly four cents per mile. On the other hand, the interior city of Atlanta, distant six hundred and sixty-five miles, can be reached for \$25.50, or a little less than 4 cents per mile, and Nashville, three hundred and seventy-seven miles, for \$11, or less than 3 cents per mile, and the conclusion must be that the rivers exert little influence upon passenger rates. The only evidence, if it be that, of competition is

found in the rates to the eastward. You can travel to Lynchburgh, Va., for 2.7 cents per mile, to Quebec for 2.6 cents, and to Boston for 2.3 cents per mile, which are the lowest rates found in the table. This is the result of what is called competition. On the other hand, the average charge for a distance of about seventy miles on nine Illinois roads diverging from this city is 4.69 cents per mile, and on three Missouri roads 4.4 cents. I will ask your committee to compare these charges on roads whose average cost does not exceed \$55,000 per mile, on their own showing, with what is done on the Belgium roads, costing nearly double the amount, but run in the interest of the public, instead of for the supposed profit of the stockholders. These are given in the London Quarterly Review for April, 1873, and show the Belgian charge to be 6s. 6d. per one hundred miles, or about 1.58 cents per mile, for first-class passenger rates.

I will next call your attention to some figures from the Saint Louis Democrat of the 28th of October, compiled from its commercial columns :

Freights by river and rail.

	Memphis, 349 miles.		New Orleans, 725 miles.	
	River.	Rail.	River.	Rail.
Flour, per barrel.....	\$0 40	\$0 45	\$0 60	\$0 70
Pork, per barrel.....	50	65	90	1 20
Whisky, per barrel.....	1 25	1 50	1 75	2 25
Grain, per 100.....	22½	24	30	37½
Bacon and lard, per 100.....	22½	28	30	43

Freights by rail.

	New York.	Boston.
Flour, per barrel.....	\$1 30	\$1 40
Grain, per 100.....	65	70

It costs, that is, to-day to send a bushel of wheat to New York, 39 cents; to Boston, 42; to Memphis, by river, 13½, by rail, 14.4; and to New Orleans, by river, 18 cents, and by rail, 22½.

I will ask you to note the fact that while in this case the river seems to exert an appreciable influence on southern-bound freights, it is not so great as we have a right to expect, nor nearly so great as is claimed by the advocates of a water-route. Our information is that the Upper Mississippi transportation is largely monopolized by a single steamboat company, and I will ask your inquiry into the tendency to control, not only the Upper, but the Lower Mississippi transportation by rings of this description. Government regulation may be found necessary in river as well as rail transportation, to prevent the extortions of monopoly. Again, I will ask you to note the fact that although we have a water outlet to the southward, the rail-rates to New York and Boston are higher than from Chicago, where, on the 22d October, the freight-rates to New York were 33 and to Boston 36 cents per bushel; and that in both cases the fact of water-routes does not avail to check the extortion to the extent desired or expected. Yet railroads fetch and carry more freight than steamboats to Saint Louis, and seem to continually gain upon them. Here and elsewhere rapidity of transit, quick returns,

certainly of carriage, and other considerations, seem to outweigh the opposing fact of somewhat greater cheapness attained by water-transit.

The average lake and canal freight-rate from Chicago to New York for twelve years, ending with 1872, was 24.19 cents per bushel; for nine years, ending with 1872, the rail-rate was 43.2. The Saint Louis rates, so far as I am informed, were somewhat higher. Taking the figures of the quotations of the 28th as our standard, and we may say it cost 39 cents to send a bushel of wheat from Saint Louis to New York, (or 33 cents from East Saint Louis.) This is 12.4 mills per ton per mile for one thousand and forty-three miles on the cheapest kind of freight (unless it be coal) known to our commerce, hauled the maximum distance, with the greatest profit to the railway company. I will ask you to compare this charge with the cost admitted by the Pennsylvania Company in their report, which, on all kinds of freight, on a great number of more or less profitable lines, was 8.98 mills per ton per mile. Assuming the cost to be as great in the present instance, $3\frac{1}{2}$ mills per ton per mile remain as profit; or, if we take the more common rule, that two-thirds of the gross receipts are absorbed by expenses, we have a surplus of 4.2 mills per ton per mile remaining. I will ask you further to note that, according to English reports, coal has been carried in quantity, on roads costing nearly three times as much as our own, for 3.2 mills per ton per mile.

In what I have said I have used Saint Louis, one of the most favorably situated business centers of the West, to show you that, even from here, the rates of freights and fares are not nearly reduced to the point where they will best subserve the interests of the people. Add the cost of reaching these business centers under local rates and the tax of transportation becomes prohibitory upon many articles, and checks agricultural, manufacturing, and even commercial enterprise. A Tennessee farmer, near Nashville, was required to pay 7 cents per bushel for the transportation of corn, twenty-six miles, to that city. An Iowa fruit grower was charged \$84 freight on a car load of apples ninety-one miles, or nearly a dollar a mile car service.

Add to cases like this, of which numerous other instances might be cited, the abuses arising from unjust discrimination, from the caprice of irresponsible power, and sometimes from the malice of officials, and you have a state of things under which the farmers of the West grow more impatient day by day. Agricultural products have been abundant and cheap, and under the existing state of transportation the farmers have had to lose. New York prices, less transportation, are Western prices for articles of export, and when prices in New York are low and transportation high it brings the price in our markets below the cost of production. I think a bushel of corn cannot be produced, on the average, in the northwest for less than 30 cents, but many have been sold during the last twelve months for 5, 10 and even 15 cents below the cost of growing. Let a general failure of our Western crops come and the eastern market-men will find it difficult to buy bread under the existing transportation rates.

Hence, Mr. Chairman, we demand of our Representatives in Congress the regulation and improvement of existing routes of transportation and the construction or opening of new lines of transportation. We feel that, individually, we should be protected from the invasion and extortion of corporate moneyed monopolies. Rail, lake, canal, and river transporters and transportation companies should be made to serve the public at reasonable rates, without combination or discrimination, or be compelled to make way for those who will. We ask that this be done promptly and thoroughly. I think we are entirely agreed in asking the

immediate improvement of the mouth of the Mississippi as a means of southern exit, and of the mouths of the lakes as a means of northern exit by water. But, as water-routes are not always navigable, we also ask, though with less unanimity, freight-lines that, under control of Government, shall run at cheap, fixed, and uniform rates throughout the year, on the principal of furnishing a maximum of service for a minimum cost—the same principle upon which the post-office system is managed. We do not ask this for the benefit of ourselves simply, but in the interest of the whole people, who need, equally with us, that transportation should be placed as near cost as practicable.

My associate, Mr. Tuffts, will also submit some additional suggestions, which I cordially indorse.

MEETING OF THE NORTHWESTERN FARMERS' CONVENTION.

FIRST DAY.

MORNING SESSION.

The northwestern farmers' convention assembled in McCormick's Hall at 10 o'clock yesterday morning. The attendance at the opening was very large. The fine hall looked as neat as a new pin, but was as chilly as an iceberg.

The meeting was called to order by the Hon. W. C. Flagg, of Illinois, who read the call as published in The Tribune yesterday.

Mr. Flagg then stated that this call had been understood by the editor of the Indianapolis Sentinel to favor the abolition of *railways* instead of railway *monopolies* as expressed in the call, a misconception that could only have arisen from the fear of limiting railways at that great central focus of railway tracks. The objects of the Convention called by the committee were three: 1. Cheap transportation, embracing water transportation; regulations by legislation, State and National, of existing railways; Government railways. 2. Perfecting organization in and between the several States. 3. Perfecting and pressing upon State and National legislation the most easy and prompt methods of relief. The central committee of the Illinois State Farmers' Association had taken the responsibility of calling the convention and naming these topics as proper for the discussion of the convention. He would ask the convention to nominate a temporary chairman.

Temporary officers.

W. C. Flagg was nominated as temporary chairman, and unanimously elected. Mr. Flagg declined to serve.

Mr. C. D. Beman, of Waukan, Iowa, was nominated, and unanimously elected.

Mr. Beman expressed his pleasure at the convention. He was on his way to New York to organize a State grange there, but remembering that the convention was in session, he remained there. The question of cheap transportation was one of importance to the States of Iowa and Illinois especially, which alone produced last year 400,000,000 bushels of grain, most of which was conveyed to the seaboard.

Mr. Hitt, of Oregon, was nominated temporary secretary, and elected. Mr. Hitt could not serve.

Mr. S. M. Smith, secretary of the Illinois organization, was appointed to the place.

Credentials.

A motion was made to appoint a committee on credentials, during the discussion of which Mr. S. M. Smith stated that precautions had been taken against intrusion by the issue of admission tickets, and the appointment of a door-keeper, who would aid in protecting the convention.

The announcement was received with cheers.

It was resolved to appoint upon the committee two delegates from each State and province. When completed the committee was found to consist of the following delegates:

Illinois—W. R. Schopp, M. M. Hootan.

Indiana—Henry Doupp, W. E. Lockhard.

Wisconsin—O. B. Gooder.

Iowa—B. H. Dickson, A. S. Shaffer.

New York—H. S. Clark.

The committee retired, and the convention adjourned until 1.30 p. m.

AFTERNOON SESSION.

The convention re-assembled at 2 p. m.

Dr. Wight (Wisconsin) moved the appointment of a committee of three on permanent organization.

O. M. Wight, Wisconsin, D. W. Dame, Illinois, and S. Clark, New York, were appointed.

The committee retired.

Mr. E. Pomfret, Illinois, offered a resolution limiting speeches to ten minutes.

It was ruled out of order at that time.

Mr. Lane, of Illinois, suggested that they have short addresses while waiting for the committee.

Mr. Boone, of Jo Daviess County, said he would like to hear from Mr. S. T. K. Prime, who was one of the originators of the movement, and the author of the Livingston County platform.

List of delegates.

The committee on credentials were announced, and the chairman reported the names of delegates, as follows:

Illinois.--Wright Kemp; J. H. Elliott; G. M. Palmer, Bureau County; John Sweeny, Putnam; A. Maltby, Ogle; J. P. Tripp, Boone; J. F. Lewis, Douglas; Luke Teeple; W. Patton; Edwin Lewis, La Salle; Lafayette Anderson, Stevenson; John Snelling, La Salle; A. D. Fisher, Putnam; P. H. Hodges, Wayne; W. Belding, George B. Marsh, Kane; T. B. Wheeler, Kane; W. H. Colton, Kane; John Harris, Lake; Charles Boone, Jo Daviess; R. M. Milliken, Stephenson; C. F. Ingalls, Amboy; Edwin Lewis, La Salle; T. D. Church, Clark; Charles Brophy, Kane; Dr. H. D. Thrall, Wayne; Otis Baker, Grundy; J. A. Cooke, Kane; F. B. McCauley, Ogle; D. H. Metzke, Iroquois; W. H. Ives, Christian; Oliver Talbot, Ogle; C. H. Larkin, Kane; Achilles Chiquine, Iroquois; J. M. Thompson, Will; William C. De Wolf, Boone; H. N. Ingersoll, Will; Silas Hayes, Livingston; A. P. Coffeen, Champaign; H. R. Conkling, Grundy; A. P. Loomis, Cumberland; W. G. McGill, Mason; Henry Funk, Shelby; Henry Martage, Piatt; Jesse Bush, Piatt; W. Lane, Ogle; G. S. Peabody, Christian; Hiram Whittemore, Kankakee; A. Harper, Bureau; S. H. Walker, La Salle; Joseph Hart, La Salle; George Wallace, La Salle; S. A. Greene, Marshall; George Seboles, Marshall; A. S. Myers, Marshall; G. W. Landis, Livingston; E. J. Sutherland, Peoria; L. F. Ross, Macoupin; R. D. Ward, Christian; C. S. Gichultz, Ogle; William Henry Greene, McDonough; Thomas E. Compton, Iroquois; N. G. Searles, Kankakee; S. Hutchinson, Henderson; A. McDougall, Henderson; H. M. Whitmore, Henderson; Thomas Bishop, Kane; H. W. Rincker, Shelby; Alfred G. Willards, Iroquois; A. J. Graves, Boone; John W. Hitt, Ogle; M. King, Henry; B. F. McCutcheon, Ogle; George E. Canfield, Ogle; M. E. Pomfret, Tazewell; M. C. Colton, Kane; H. C. Bliss, Bureau; William H. Turpenning, Livingston; James Hallett, Carroll; M. B. Lloyd, Henry; Edward Roesslin, Shelby; Isaac Weltering, S. T. K. Prime, Livingston; John Folly, Putnam; W. H. Blakely, Effingham; S. P. Tuft, Marion; Thomas Wallace, Iroquois; A. H. Dolton, Cook; John S. Armstrong, La Salle; Oliver Townsend, Iroquois; A. B. Colwell, Iroquois; F. A. Harris, Iroquois; L. D. Edwards, Rock Island; John M. Ferris, Union; Arie Van Dolan, Coles; E. M. Hutchinson, Coles; William Niebolson, Will; T. Wheeler, James King, Lee; T. P. Lowry, Lawrence; Thomas Willis, Iroquois; T. Bishop, Kane; William L. Cohenour, Christian; M. A. Doane, Lee; Henry S. Bloom, Kankakee; Richard Seaton, Adams; B. F. Whittaker, Putnam; Samuel Lichty, Carroll; A. S. McKee, Kankakee; J. P. Day, Rock Island; Luke V. Ophim, W. R. Sharp, Champaign; William Peacock, De Kalb; M. S. Arnold, Lee; B. Cook, Lee; J. C. Field, Cass; W. A. Wickersham, W. H. Grinnell, Kankakee; J. S. Blackstone, Kankakee; J. B. Colby, McHenry; William Cooper, Kankakee; E. P. Forbes, La Salle; Edward Rollins, Iroquois; Samuel Parr, La Salle; H. C. Barnes, Jonathan Stewart, Stephenson; Joseph Boovey, Schuyler; B. F. McHutchen, Ogle; H. A. Graves, Boone; Edward King, Iroquois; J. F. Collins, Douglass; S. J. Davis, Stevenson; Ed. Hunter, Bureau; J. C. Smith, Adams; W. Mattock, Kendall; Thomas McD. Richards, McHenry; Sam Leitze, Kendall; J. M. Gridley, Will; F. P. Beech, Iroquois; William Welier, Cumberland; J. W. Needham, Cumberland; M. M. Hooton, Clinton; Henry Funk, Selby; W. Doyle, Christian; J. J. Foltz, Livingston; W. D. Hamilton, Macon; W. M. J. Smith, R. M. Gorsuch, L. F. Ross, Macoupin.

The following list of informal delegates entitled to seats, but not to votes, was read:

Illinois.--T. Butterworth, Adams; J. M. Allen, Henry; W. C. Flagg, Madison; J. L.

Owen, Will; Dr. C. Perry, Marshall; S. N. King, Ogle; S. V. Lapham, Whiteside; L. S. Pennington, Whiteside; J. W. Knapp, Ogle; W. W. Tilton, Lee; M. B. Spafford, Lee; U. C. Wheeler, Du Page; W. U. King, Ogle; A. L. Miner, Kankakee; William A. Chambers, Lee; J. H. Hudson, Jo Davies; D. W. Dame, Carroll; Wilson Pottinger, Kankakee; Lot Schofield, Kendall; James M. Gale, Kendall; L. P. Wood, Boone; Albert Warner; William More, Rock Island; A. Webster; Ezra Hazard; R. G. Benton, McHenry; A. J. Alexander, Iroquois; D. W. Dole, Kankakee; W. A. McKegan, Livingston; W. Boyce, Livingston; J. Henry, La Salle; J. B. Cooley, McHenry.

Wisconsin—O. P. Gordon, Rock; A. B. Deboie, Dane; O. M. Wright, Milwaukee; J. M. Kellogg, Kenosha; William Reed, Rock; W. A. Webster, Rock; A. Warner, Rock; S. Wixon, Rock.

Iowa—S. H. Dixon, Benton; H. S. Shaffer, Tremont; George Saum, Jones; J. W. Pinckney, Madison; C. D. Beman, Waukegan.

Indiana—R. M. Lockhart, De Kalb; John Q. A. Newson, Bartholomew; Henry Doup, Bartholomew; W. C. Lockhart, Montgomery.

Nebraska—J. Sterling Morton, Otoe.

Minnesota—Thomas S. Smith, Dakota.

New York—G. S. Clark, James Connolly.

Canada—Frank Turner and W. Capriol, Toronto.

On motion, it was agreed that all officers of the Illinois State Grange and Farmers' Association should be admitted to the convention.

On motion of William Dalton, of Cook, all members of the Illinois Agricultural Association were declared members.

The same privileges were extended to all other States.

Permanent officers.

The committee on permanent organization reported, recommending the election of the following:

President—James M. Allen, Illinois.

Secretaries—S. M. Smith and S. T. K. Prime, Illinois.

The report was adopted, and Mr. Allen called to the chair. On taking his seat he said there was no question which could affect the people of the Northwest more than this question of transportation. It had absorbed his attention for many years. He hoped the deliberation would be wise and careful, and result in good. He thanked the convention for the honor done him.

Limiting speeches.

Mr. M. E. Pomfret, of Illinois, moved that all speeches be confined to ten minutes, and no speaker be allowed to speak twice upon the same subject. It was amended by reducing the time to five minutes, and finally passed in the original form.

Order of business.

Mr. W. H. Greene, of McDonough County, moved that a committee of five on order of business be appointed by the chair.

This motion prevailed, and W. H. Greene, W. C. Flagg, Illinois; O. M. Wright, Wisconsin; R. W. Lockhart, Indiana; and G. S. Clark, New York, were appointed.

Mr. Flagg inquired whether the convention was in favor of an evening session. He therefore moved that when the convention adjourned after the present session it adjourn until 7 o'clock.

The motion prevailed.

An invitation.

Mr. Flagg presented a communication from Senator Windom, chairman of the Senate Committee on Transportation, as follows:

"WASHINGTON, October 19, 1873.

"W. C. Flagg, President of Illinois State Farmers' Association:"

"The Senate Committee on Transportation will hold a session at Saint Louis on the 30th instant. In case the convention at Chicago on the 22d shall deem it advisable to favor us with any information or suggestions by delegates, or otherwise, we shall be glad to confer with them. Please communicate this to the convention.

"WILLIAM WINDOM, Chairman."

Mr. Shaup moved that a committee of three be appointed to confer with the Senate Committee on Transportation.

Mr. Hogg said he supposed that, before the convention adjourned, some resolutions would likely be passed expressing the feelings and wants of the farmers. The views of the merchants had been given, but the farmers, the shippers of the grain, had never been heard from.

Mr. Hart, of La Salle, thought the motion premature. There should be more discussion of the subject before any delegation was appointed.

Thereupon Mr. Shaup withdrew his motion.

Regulation of railroads.

N. G. Searles, of Kankakee, offered the following preamble and resolutions :

Whereas railroads have been built by large grants of public lands, and by subsidies granted them by towns, villages, and cities through which they have passed ;

Whereas they have the power granted them by the State to run their line of road through our farms, and even through our houses or barns, if they come in the way of their line or road, and appropriate our private property to their use without our consent, and against our wishes and desires : Therefore,

Resolved, That railroads are public domain, and, as such, should be under the control of congressional law.

Resolved, That we call upon Congress to enact a general railroad law, and put them under the control of a department of the Government, or a bureau of the Government, called the Department of Railroads and Transportation, that shall establish a uniform tariff of maximum rates on the different classes of freight, and passenger rates per mile on railroad, and rates per ton on water transportation from place to place.

Discussion.

Mr. Perry, of Marshall County, moved that all resolutions offered to the convention be referred to a committee on resolutions. He subsequently withdrew the motion.

Mr. Searles said the question of transportation was not a new one to the country. The railroads got all they could from shippers, and there was no fixed law to control them. He believed if they were put under governmental supervision by a Department in Washington, there would be an end to this watering of stock.

Mr. Perry rose to a point of order, but the chair decided against him.

Mr. Searles continued, saying that, in order to bleed the shippers, railroad corporations watered their stocks. They did it because there was no law to hold them down. He called upon Congress to fix maximum rates from point to point. The shipper would by this means be enabled to know definitely what would be the cost of shipping. Such a law would tend to equalize the capital of railroads.

The speaker's time was cut short.

Resolution committee.

Mr. Beman, of Iowa, moved the appointment of a committee of seven on resolutions by the chair.

The motion prevailed, and the chair appointed as such committee the following gentlemen : C. D. Beman, Iowa ; A. H. Dolton, Illinois ; W. S. Lockhardt, Illinois ; T. T. Smith, Minnesota ; J. M. Kelley, Wisconsin ; W. M. Hootan, Illinois ; J. M. Norton, Nebraska.

Mr. Searles moved to lay his resolutions on the table, which was done.

The Illinois railroad law.

Mr. Norton, of Nebraska, offered the following resolution :

Resolved, That a committee of three citizens of Illinois be appointed to report to this convention the effect upon producers and shippers of the legislation on railroads in Illinois, and whether they advise similar legislation in all the States.

Adopted.

The committee on order of business reported, recommending that the subject of water transportation be the order for the evening, which report was concurred in.

The convention then adjourned until 7 o'clock.

EVENING SESSION.

The convention resumed business at 7.30.

Mr. Caffeen, of Champaign, urged the following resolutions :

Resolved, That the first duty of the people is to subject all transportation companies or corporations to the restraints of law.

Resolved, That it is their next duty to urge the making of a ship-canal from the Atlantic sea-board, by the way of the lakes, the Illinois and Mississippi Rivers, to deep water in the Gulf of Mexico, by the National Government.

Resolved, That it is their next duty to obtain the assistance of our Federal Government by an advance of credit for the purpose of building a double-track freight railroad from near the line of the Kansas and Nebraska, near an air-line as possible to New York City.

Mr. Wight was in favor of the route suggested, but was opposed to the Government undertaking to build it. There was a bar across the Mississippi which \$75,000 a year failed to dredge and keep clear. A canal could be built making a way clear to the ocean from New Orleans at a cost of \$8,000,000, and that would give an outlet for the west by way of the Mississippi, reducing the freight to Liverpool 20 cents a hundred. If the railroads added 5 cents per hundred to their rates it would be equivalent to laying a tax upon the farmers of \$50,000,000 a year. He was in favor of the scheme he had mentioned, and of the Niagara route, but did not care that the Government should undertake the work. They should elect men to Congress who would do the people justice. Ten millions of white men were being robbed every day out of half their earnings by these monopolies. They should build a canal around Niagara owned by themselves, and not be waiting for action by a reluctant Congress.

Mr. Perry did not think it possible to build canals by private enterprise. The Government should do it, and then they should elect, to take charge of the public works, men in whose honesty they had full confidence. [Applause.] The Government should do it.

Mr. Bishop, of Kane, wanted present relief. He was tired of working fifteen hours a day. If they waited for ship-canals there would not be much of them left. Twenty years of time would not build ship-canals that would do any service. The fact of it was they were living too high. Their living was 75 per cent. too high. The extension of patents should cease; everything was taxed by a patent; and then they were ground down by an oppressive tariff, which raised everything to enormous rates. He knew a man in Elgin who paid \$3.50 for a hat, and the same man's wife found she could buy the same kind of hat for 90 cents. They could not shoe a horse for less than 50 cents. Were it not for the tariff the operation would cost only 25 cents. They had to pay \$75 for a stove that should not cost more than \$25. A friend of his bought a suit of clothes for \$30, and when he came back to Elgin the tailors there told him they would not make them for less than \$55, and one man asked him \$60. They should have a lower tariff. [Applause.]

Mr. Lockhart (Illinois) was opposed to the Government going into the canal-digging business.

Mr. Flagg was in favor of the Government doing anything it could do better than private parties. The Erie Canal was better managed than the Erie Railroad, and the Michigan Canal was run better than perhaps some railroads. There were cases where the Government did much better than private citizens. The Northern Pacific Railroad was badly managed by private parties. When they came down to practice they should ask what way they could get relief speedily and sufficient. The question was, which of the routes would give the most relief for the least money? There was the Kanawha and the Niagara Canal schemes. Each had its favorite. The convention should choose something, and then urge it upon Congress.

Mr. Pomfret wished to move that it was the sense of the convention that water-transportation would not give immediate relief.

Mr. Caffeen defended his resolutions.

Mr. Lewis, of Douglas County, offered a substitute as follows:

Resolved, That the producing classes of the country can no longer endure the exorbitant rates of transportation imposed upon us, and that we demand that our National Congress take into consideration immediately the transportation question.

Resolved, That Congress open a circumnavigable route by water, and also build one or more double-track railroads from east to west, and pass laws regulating tariffs on lines already built.

Mr. Hart, of Lasalle, defended the Illinois and Michigan Canal, and stated that it reduced the rates of competing railroads. He was in favor of getting all the aid they could, State and national, to get some way for transporting produce to the seaboard, either by New York or New Orleans. He would compel railroads to obey law. They were public highways, and should be under control like any other public corporation. The Illinois law was partially in operation. The roads have professedly come under the operation of the law, but, practically, they had not. Next January the roads would be compelled to submit to the maximum rates being fixed by the commissioners. The law was a move in the right direction. The sovereign people of the State intended to control the public highways, which belonged to them--the sovereigns of the State. [Applause.] He believed, further, in the National Government controlling through traffic between the States. That was the right of the people, and they would demand it. [Applause.]

Mr. Harris, of Iroquois, believed the trouble with them was they were all in debt, and they had to sell their produce for what they could get. When farmers were out of debt they could hold their grain until they got their price. If they were all of one mind they could control the market. They should be united. The farmers of this country—the producers of what the world needs—should not be slaves.

Mr. Cook, of Kane, believed there should be a ship-canal to the ocean. Railroads were robbing the industrious farmer out of the earnings of his labor. They should have cheap transportation. [Applause.]

Mr. Dixon, of Iowa, was in favor of cheap transportation. It was necessary for the laboring masses as well as to the farmer. Water transportation was slow, and he questioned if a canal would do as well as the railroads are doing to-day. Railroads could be built and run cheaper than canals. They should bring railroads down to hard-pan; fetch them down where they should be, and then they would have cheaper transportation. He gave instances of discrimination in Iowa. They needed immediate relief.

Mr. Charles Boone, of Jo Daviess, said it was not a question of how to send grain to Europe, but how to convince his countrymen at home that they should pay higher prices for it. The way for them to do was not to produce a surplus, that would need transportation. It cost so much to eat the surplus that it would be cheaper not to produce the surplus. [Laughter.] He produced a surplus because he was in debt. He wanted light on this point. Had had at home over 60,000 pounds of live pork. He was an over-producer because he wanted to get out of debt. But when he produced the extra quantity, they depressed the prices and kept him in debt still. (Laughter.) No matter how he managed, they got round him. They should remember, however, that the Government was theirs, and if the Government was corrupt, it was their own fault. They could rectify it. They should make common cause with the working classes. They need not send too much produce to Europe.

A gentleman reminded him America could not starve the world, and had a competitor in Russia.

Mr. Shaup, of Champaign, believed the railroads to the East were not increased fast enough to keep pace with the new roads in the West.

Mr. Wicks, of Lasalle, believed they wanted financial reformation. \$300,000,000 national-bank currency was put into the hands of bankers to make them rich.

Mr. Flagg moved to refer the resolutions and substitute to the committee on resolutions.

To-day's order of business.

The following order of business for to-day was agreed upon:

9 a. m.—Railroad transportation.

10 a. m.—State legislation regulating railroad freights and prices.

11 a. m.—National legislation regulating railroad freights.

1.30.—Government railroads.

2.30 p. m.—How shall we perfect the farmer's organization in the different States?

3.30 p. m.—Co-operative buying and selling.

4 p. m.—Miscellaneous business.

It was decided to appoint a committee of five to confer with the Senatorial Committee on Transportation.

Adjourned until 9 o'clock this morning.

SECOND DAY.

MORNING SESSION.

The Northwestern Farmers' Convention re-assembled at 9 o'clock yesterday morning in McCormick's Hall, which was cold enough to coagel the enthusiasm in persons less earnest than the gentlemen composing the convention.

President Allen called the meeting to order.

Committees appointed.

The following committees were appointed:

To meet the Senate Transportation Committee—W. C. Flagg, Madison; Charles E. Barney, Bureau; S. P. Tufts, Marion; J. D. Beatty, Jersey; S. T. K. Prime, Livingston. On the Illinois railroad law—M. B. Lloyd, Henry; L. F. Ross, Fulton; M. M. Hooton, Marion.

The first order of business was announced to be the discussion of State legislation regulating railway freights and fares.

Mr. Flagg's address.

The Hon. W. C. Flagg, of Madison, addressed the convention as follows:

FELLOW-CITIZENS: A railway is a road graded and having rails of iron, wood, or stone, upon which carriages, with wheels adapted to the rail, may run. In their original conception and execution they were private roads, built upon one person's land, or by special permission of the person through whose lands they run. This kind of a railroad, built without Government intervention, by agreement of the parties in interest, might justly claim to be exempt from all Government regulation, except police regulation, so long as it did not offer itself to do the business of a common-carrier. That is, it would do only the business of the person or persons owning the road; would undertake no public function, and would not exercise the power of eminent domain conferred upon it by the sovereign power. This is the kind of a railway that railway attorneys *ought* to be talking about when they deny all right of Government to interfere with railway management.

But railways of that kind are few and unimportant. Government is generally requested by the railway companies themselves to interfere in the inception of their enterprise, to the extent, at least, of giving certain privileges to a corporation, including the right to condemn and use the land of others. In England and America this is done through a charter granted by the legislature under a general or special law. In Belgium, France, and other continental countries it appears to be done by "concessions," which are very similar in their character to charters. In England these charters are special for each railway, there being no general law on the subject; and, as they are granted by act of Parliament, which is the sovereign power of the state, so they may be modified or repealed, in the pleasure of that body. In the United States most of the railway-charters are granted by or under State laws, by special act, or under general laws; but a few lines have been chartered through the Territories, &c., by act of Congress.

By these charters, granted by the State, which are what now most interest us, the State transfers, or attempts to transfer, its right of eminent domain to the railway company, so that the railway company may go in and take possession of such lands as it may need on the alleged ground of its being for the public's use; and also the town, county, or township may vote subsidies to the railway company, on the ground that such donation will be for the public benefit, or a corporate purpose. Having gone thus far, the railway is evidently intrusted with a public function. It has secured privileges to which it was entitled on no other ground than its being a work intended and pledged for the public benefit. The State has given it extraordinary privileges which it had no right to give, or else the railway company is no longer a private company, and owes special duties to the public.

The railway company may admit the duty of a common-carrier; but that is not enough. Any person or persons who make a custom of carrying for hire are common-carriers, without these extraordinary privileges, and are required to do all that is reasonable for reasonable pay. The teamster between here and the next town, making a business of carrying goods for all who offer, is a common-carrier; but he has no right of eminent domain; he cannot solicit this town to vote him an encouraging bonus. But the railway company is a common-carrier, and a good deal more. In the nature of the case, it is its duty to make a special point of serving the public, even if the highest attainable profits are not realized. The company has, it is true, a private duty to its stockholders of paying the rate of interest that is reasonable on permanent and not fluctuating investments. But, coincident with this duty it owes to the public, it serves the duty of low rates and large business, so as to build up the country through which it passes, to carry its increasing trade, and so as to attract, and not dry up and drive away, enterprise of an agricultural, manufacturing, or commercial character. The common-carrier can limit his business. He can set two wagons to work where there is business enough for three, and you cannot require him to put on a third. The railway company is in duty bound to find railway service at least to the capacity of the average freight and passengers offered.

The common-carrier is liable to have his rates of fares and freight fixed or regulated by law. He may sell his horses and wagons if he will, but so long as he continues in business he must take such rates as the city ordinance or law of the State may fix. We may say of the railway company, "If you do not like to carry passengers at three cents a mile, you can sell out to some one who will, or tear up your track, and let another company see if they cannot serve the public at reasonable rates."

But right here looms up the Dartmouth College decision. Just as the Dred Scott decision was used to subserve one form of human slavery, the Dartmouth College case is perverted to hold our hands while we are robbed. The Dartmouth College decision was the most honest, and therefore it has been the most infamously used.

Railway-lawyers tell us that a railway is a private corporation. That the charter of a private corporation is an executed contract between the State Government and the corporation. That the Constitution of the United States forbids a State from passing

any "law impairing the obligation of contracts." That a law fixing reasonable maximum rates by our State legislature is an impairing of the charter-contracts existing between the State of Illinois and many or most of the railroads in it, and, therefore, unconstitutional. All of which is based upon the Dartmouth College case.

But, as I have said, the railway company receives and uses privileges which the legislature has hardly a right to confer upon a private corporation, and therefore has admitted itself, by its own solicitation and acts, to be at least a corporation with a public function, and in no wise in a condition analogous to that of Dartmouth College. Then it is by no means an unquestioned doctrine whether all charters, even of private companies, are contracts. The Supreme Court of the United States I understand to be nearly equally divided upon that question. It implies that whoever can buy or steal a bill through the legislature shall be protected in his iniquity by that contract forever after, and is a most dangerous doctrine, if all our railway-charters, "conceived in sin and brought forth in iniquity," are to be counted under it. In any event, we reduce the railroad company to this dilemma: Either the State has conferred upon it, and it has exercised, privileges to which it is not entitled, and is a transgressor upon the rights and property of others, or else it has admitted its obligation to serve the public for the public welfare, and is subject to regulation as a common-carrier, perhaps in either case.

Thus much in regard to chartered railways. A third class is not only chartered, but receives a grant, bonus, or guarantee from the chartering power. The Union Pacific has received immense donations of these kinds. The English government guarantees a stated interest to the railway companies of India. The French government, under Louis Napoleon, guaranteed an interest on some of the later roads. Germany has subsidized and guaranteed interest and dividends. Our Illinois Central, and numerous railways west of us, have been assisted in one or all of these ways. In all these cases the rights of governments to control and the obligations of railway companies to serve the public are correspondingly increased.

A fourth class of railways, more spoken of than experimented with, are those built and owned by the State or National Government, but leased under fixed rules to private companies. This plan has its advocates in Great Britain and our own country, but has not yet, in later days at least, been put to a practical test. Of these, the governing power would, in the nature of the case, have all desired control.

And, fifthly and lastly, I mention railways built, owned, and operated by the governing powers, as is the case of a part of those in Belgium and Prussia. Here, again, the creating power has entire control.

These five classes of railways carry us from the entirely private to the entirely public railway. I have gone over them that you may see how ideas and theories have been confused in applying the differing rules applicable to each to the wrong class of railways. You will notice that, practically, Government intervention is sought in all of them, and that difficulties and disputes arise only in reference to the chartered and subsidized roads, where private welfare and where the power and temptation to make large gains by additional demands upon the public becomes very great. How to curb and regulate this avaricious spirit for the greatest public welfare, is the most difficult part of a difficult problem now before the American people. We have monopolies, conspiracies against the welfare of the people in many other shapes, but not so mighty and pervading as this.

Before going farther, it is well to notice here the confused conceptions that have existed as to the nature of the railways and railway service. The extent to which they would displace and supersede the turnpike, the canal, and even the rivers, lakes, and oceans, as ways of travel and freight, was hardly anticipated, even by enthusiasts; and the indirect, social and commercial effects that would be produced were foreseen by no one. I suppose that we of to-day, in spite of the wild anticipations to which the rush of railway construction might lead us, have still but faint conceptions of the part they will play in the future. Yet, it is likely that narrow-gauge railways and trains, or horse-railways, will, before fifty years have elapsed, occupy the principal and even the neighboring country roads, and that most men's farm-houses will have access by rail. But few, however, anticipated anything of this sort. Yet, reduced to practice, it means that our highways shall be railways, and our railways highways. The old Duke of Wellington very likely spoke better than he knew when he said of railways in Parliament, "We must take care and not lose the old English idea of the King's highway," yet to that we must come at last. The railways of the United States and of the Old World are its highways that must carry its travel and its commerce, and that must be dominated by no feudal lords demanding tribute of all who pass. This is what our new constitution of Illinois means when it declares the railways of this State public highways, free to all persons for the transportation of their persons and property thereon.

The peculiarity of this new class of highways arose from the fact that the people of Great Britain, and still more the people of America, especially after a little disastrous experimenting, about forty years ago, that demonstrated that neither state nor indi-

vidual was very successful, in railway management, resolved to leave their building and operation, under more or less regulation, to private enterprise. In doing this the public function of the completed work was more or less lost sight of. The necessity of protecting the rights of travelers and shippers was not appreciated. It was like turning over the roads of the country to turnpike companies, with the privilege, or rather the concession, of putting down a turnpike-gate every ten miles, and charging tolls at will of all who passed.

Feeble and somewhat inefficient, because inexperienced and often unintelligent, attempts were made by some in the beginning to fix maximum rates; but the prevailing idea has been to rely upon competition. It was early assumed, apparently, that railroad would compete with railroad just as steamboat does with steamboat. England and the United States trusted to this. You hear it preached even yet in Illinois. But it is an utter delusion. As a rule, a railroad has a practical monopoly of the country through which it runs. "There are many cases," said John Stuart Mill, in his *Political Economy*, "in which the agency, of whatever nature, by which a service is performed, is certain, from the nature of the case, to be virtually single—in which a practical monopoly, with all the powers it confers of taxing the community, cannot be prevented from existing. I have already, more than once, adverted to the case of the gas and water companies, among which, though perfect freedom is allowed to competition, none really takes place, and, practically, they are found to be even more irresponsible and unapproachable by individual complaints than the government. There are the expenses without the advantages of plurality of agency, and the charge made for services which cannot be dispensed with is, in substance, quite as much compulsory taxation as if imposed by law. There are few householders who make any distinction between their water-rate and their other local taxes. In the case of these particular services, the reasons preponderate in favor of their being performed, like the paving and cleansing of the streets, not certainly by the general government of the State, but by the municipal authorities of the town, and the expense defrayed, as even now in fact it is, by a local rate. But, in the many analogous cases which it is best to resign to voluntary agency, the community needs some other security for the fit performance of the same than the interest of the managers, and it is the part of Government, either to subject the business to reasonable conditions for the general advantage, or to retain such power over it that the profits of the monopoly may, at least, be obtained for the public. This applies to the case of a road, a canal, or a railway. These are always, in a great degree, practical monopolies; and a government which concedes such monopoly to a private company does much the same thing as if it allowed an individual or association to levy any tax they chose, for their own benefit, on all the malt produced in the country, or on all the cotton imported into it. To make the concession for a limited time is generally justifiable on the principle which justifies patents for inventions; but the State should either reserve to itself a reversionary property in such public works, or should retain and freely exercise the right of fixing a maximum of fares and charges, from time to time, varying that maximum. It is perhaps necessary to remark that the State may be the proprietor of canals or railways without itself working them; and that they will almost always be better worked by means of a company renting the railway or canal for a limited period from the State." Mr. Mill, although a free-trader in the broadest sense of the term, you will see, recognized a class of companies needing government supervision and control. Mr. Frederic Hill, in a paper read before the British Association for the promotion of social science, in 1870, expresses similar opinions, and confirms them from actual experience. He answers the question, Why should not the state control manufactures, and a mercantile marine, and where is the line of separation to be drawn? in this wise: "The true place for this line, as it seems to me, is between things which can be multiplied indefinitely, and in which, therefore, there can be an effective competition, and those in which, in the nature of things, there is a monopoly." "The nature of things," in the case of a railway, I take to be the immense risk of competition on exactly the same line. A road-bed, so far as grading and even bridging and tying is concerned, is "permanently invested;" that is, if the enterprise is not successful a large part of the capital cannot be withdrawn.

I may add to this the reasons suggested by Theodore Bacon in *Old and New* for February, 1873: "To give scope to competition there must not only be large and free demand, but the possibility of supplying by many persons, from many sources, the very commodity demanded. Such possibility the nature itself of railroad traffic, except in very special cases, excludes."

But all who have studied the subject will fully agree with Mr. Adams when he said, in his speech in behalf of the Massachusetts railroad commissioners, before the railway committees, that "while the result of ordinary competition is to reduce and equalize prices, the result of railroad competition is to produce local inequalities and arbitrarily raise and depress prices."

For instance, we have had a railroad system of some sort in Illinois for about twenty years. Take the passenger-rates of periods six years apart, which I am able to give

from old railway-guides. The amount of railway-service, and so-called competition, has wonderfully increased. Our railroad companies have learned how to "acquire" railways at very low prices. Our country is much more densely populated, and travel indefinitely increased. But here are the facts: In 1853, of three railways in the State—the Sangamon and Morgan, Chicago and Mississippi, and Galena and Chicago Union—two were charging 3 and 4 cents per mile. In 1859, 3 cents was the average charge on the different roads. In 1865, with a largely inflated currency, it was $3\frac{3}{4}$ cents on seven railroads where rates were given, and in 1871, on eight different Illinois roads, converging at Saint Louis, it averaged $4\frac{1}{2}$ cents per mile; and during the month of September, 1873, nine different roads, radiating from Saint Louis eastward, were charging, in defiance of law and public opinion, an average on distances not exceeding seventy miles, 4.69 cents per mile, or more than 55 per cent. than when they began their work twenty years before, and this in the face of great increase of business and supposed competition.

Here is what the joint select committee of Parliament said of "competition" in 1871:

"That committees and commissioners, carefully chosen, have, for the last thirty years, clung to one form of competition after another; that it has, nevertheless, become more and more evident that competition must fail to do for railroads what it does for ordinary trade, and that no means have yet been devised by which competition can be permanently maintained."

England and America, you see, teach us the same lesson. Combination between rival lines has destroyed competition, except that occasional "cutting of rates" makes fearful fluctuations, in which a few shippers gain, but for which the general public must sooner or later pay. Our railways, practically, that is, are regulated not by competition, but by combination; by one of the parties in interest, and not by both. Thereby you, the citizens of a democratic-republican country, are enabled to know how cruel, relentless, and unscrupulous a thing is arbitrary power in the hands of a few. Regulation by combination means that the railroad managers are feudal lords, and that you are their serfs. It means that every car-load of grain, or other produce of your fields and shops, that passes over the New York Central shall pay heavy toll for right of transit to Vanderbilt, the robber baron of our modern feudalism, who dominates that way. Regulation by combination means that you, the large manufacturer or shipper or consignee at this point, shall truckle to railway officials for special favors, and skulk and avoid the "farmers' movement," when you believe it to be right, for fear you will compromise your pecuniary interest. It means that you, the farmer, shall be compelled to sell your corn below the cost of production, or that the consumer of the Atlantic seaboard shall pay too much for his bread. It means *despotism*—paralyzing enterprise, rewarding subservience, suborning legislators, corrupting society, and trampling on the rights of the citizen.

Dissatisfied with the results of this kind of regulation, the party of the other part—the people—ask governmental interference, and regulation thereby. This regulation may be national, by act of Congress, which has power to "regulate commerce," not only "with foreign nations," but "among the several States." "The legislature of the nation," says Pomeroy, (Constitutional Law,) "has exerted but a small portion of its power to regulate commerce among the several States." Or this regulation may be State regulation, confined, of course, to the limits of that State. This regulation again may take the shape of regulatory laws intended to be self-acting in their character, of placing railways under the supervision and control of a board of commissioners, or, finally, by owning all or a portion of the railways and operating them, or having them operated, at cheap and fixed rates.

Our Anglo-Saxon turn of legal thought leads us to prefer a law to which those aggrieved can appeal, such as laws fixing maximum rates of fare and freight, and punishing their violation. Parliament, at first, relied on tariffs of rates, but, Mr. Adams tells us, they did not prove efficacious, probably because the whole subject was not understood. Belgium inserted maximum rates in the original concessions. France makes tariffs of maximum rates for each railway, and prohibits special favors in the way of rates to individuals. Germany has no maximum rates. New York, in the case of the New York Central, has succeeded in making a regulatory law of this kind effective as regards passenger rates. Ohio, a State that has attempted much in this direction, fails in getting the laws obeyed; but the rates seem to be, for some reason, considerably lower than in our own State. I believe the same is true of Michigan. Thus far, in Illinois, our legislation under that head is faulty, but there is more determined effort in that direction from the fact that our State constitution necessitates such action, and the people have ratified that section by an immense majority.

The lack of success in passing laws of this character is owing to the intrinsic difficulty of the subject and the ignorance of legislators. Probably not one legislator in ten has informed himself, even tolerably, upon the history and experience of railway management and railway legislation. He comes to the discussion of a very difficult topic with crude ideas, preconceived notions, and vagueness of purpose. I speak now

of the man anxious to honestly serve the people. He will be confronted with and approached by members who represent, not popular rights, but "railroad rings," and they will work upon his fears and prejudices to vitiate his action. Then, as I have said, the subject is difficult. The circumstances that surround one road are very different from those affecting another, or even the same road, at another time. It is about as difficult to adjust a railway tariff as it is a protective tariff, and many are inclined not to do it for the same reason. Charles Francis Adams, of the railway commissioners of Massachusetts, regards relief under this head as hopeless, and the attempt as futile. He quotes from the report of the parliamentary committee of 1872, which says, "Legal maximum rates afford little real protection to the public, since they are always fixed so high that it is, or becomes sooner or later, the interest of the companies to carry at low rates." But, with all deference to Mr. Adams and the parliamentary committee, I think our Illinois experience and observation teaches that a uniform maximum rate of three cents a mile for passengers would relieve the public and prevent a good deal of extortion, without much, if at all, diminishing the gross receipts of the railways. I know a new road between Paris and Arcola that put passenger fares at three cents per mile from the beginning, and the result was relatively better business than the old established Illinois Central was doing in the same country at four cents per mile. If the Illinois Central were forced to carry passengers at three cents per mile I believe it would be for the permanent benefit of that road; and it would relieve the traveling public that live along it 25 per cent. of their present expenditure for a given amount of travel. We want, in Illinois, at least, and for the time being, a reasonable maximum rate for passengers. Again, take our freight, especially our local freight rates, and we find them often far above a reasonable maximum rate. A nursery-man at Marengo, before the new July rates took effect, told me that if he could get return loads that he could wagon trees in bulk to Chicago—sixty miles—more cheaply than he could send them by rail. The local freight rates of our railroads, even before the 1st of July, were 4.72 cents per ton per mile, and 2.16 for through rates. So that, as a temporary resource, I believe we should have legislation giving reasonable maximum rates on freight.

But this rough and general way of dealing with the subject is not sufficient in itself. We do not only want cheap rates, but the cheapest attainable rates. This is essential, whether we look to the pecuniary interests and physical comforts of the people, or the unity and harmony of our wide-spread population. "Anything which adds to the necessary cost of transportation," says Mr. Adams, "aggravates the tax, and anything which diminishes it, removes one more burden from human toil." "It is not enough," says Draper, in his "Civil Policy of America," "that there should be free movement for thought; free movement for the people themselves is of equal importance. That is the true method of combating climatic effects, preventing communities from falling into Asiatic torpor, and contracting senseless antipathies against each other. * * * Experience shows that travel increases as its cost diminishes. Whatever, therefore, operates as a tax on locomotion is inconsistent with the highest principles of State policy. * * * In America, transportation at the lowest possible cost assumes an attitude of an affair of the highest State necessity." Hence we feel the need of something more flexible than statute law, that can adapt rates to different conditions and classes of railways. This suggests the function of railway commissioners assigned to our new board of making up schedules of maximum rates for each road. This seems to me the best thing possible under our circumstances, but its success is, as yet, problematical. The commissioners are hampered by a *pro rata* requirement that compels them and the companies to fix rates according to distances; whereas the expense of carriage depends upon many other considerations. But they have the opportunity to inform themselves of the conditions and cost of transportation, and making themselves experts, that no legislative body can have; and can ascertain how much is a fair compensation to the railways, and not a gross extortion from the people.

But the great difficulty which the railway commissioners of our own and other States have to encounter, I presume to be insufficient and vicious legislation, and the limitation of their power by State lines. Our own railroad laws, owing to various causes, are very unsatisfactory. Rival schemes, railroad attorneys, and honest but perverse differences of policy, have prevented, thus far, our getting the desirable legislation. The late law seems to me one of the best, although not much more than a modified form of the common law of carriers. But we have no proper legislation as regards reasonable maximum rates—none concerning railways as public highways. I notice some disposition already to find fault with the railway commission, but it is unjust. It seems to me that they are making the most of the laws that are given them. They are men of character and energy, and in sympathy with the people. But the limitation of State lines will be a difficulty of a permanent character. Illinois commissioners will want cheap freights to the sea-board; but they are powerless. Indiana, Ohio, and New York, at least, are in the way. National legislation or regulation is needed.

But while State regulation is possible by a State legislature or commission, the problem becomes exceedingly difficult when the whole nation must be legislated for, or

when commissioners appointed by Government attempt to fix uniform rates for the Central Pacific and the Old Colony Railways. Many would consider it an impossible task, and would shrink from the enforcement of such regulations upon vast moneyed corporations. This consideration introduces the theory and practice of the Government ownership of roads, now a good deal advocated in England; and, to a certain extent, in the United States by Mr. Adams, Professor Amasa Walker, and others.

Mr. Hill, whom I have already quoted, argues that State ownership will alone give the advantages of competition, because amalgamations and agreements are soon made by private companies, and State ownership alone furnishes a steady opponent to combination. He adds:

"In confirmation of the soundness of the principle which would place railways in the possession of the state, I would refer to the experience of Belgium, where, with a tariff of charges lower than ours, [in England,] and with no payments to the railways for conveyance of mails, the government, in respect to the large number of railways in its possession, realizes an annual net profit of nearly 6 per cent., being much more than the average profit from the British railways, or from those Belgian railways which are owned by private companies.

"In France, also, where the railways have been conceded for long periods to private companies, the state retains a large interest in them, and will ultimately become their proprietor. The financial results, as shown by the dividends, are far superior to those of British railways, and this, too, with comparatively low tariffs, and with important privileges accorded to government in respect to the conveyance of mails and troops. In fact, the paternal system of government, however debilitating in its general effects, has shown itself as regards railways highly beneficial, though I think it would have been well if even there the governments had contented themselves with being the owners, and had always left their working to private enterprise."

Mr. Hill also, it will be seen, is opposed to undertaking the working of government railways by state or national authority, and holds that in the most catholic sense state control, after all, furnishes the only approximation to free trade in railway service.

Professor Amasa Walker, the political economist, in a late number of the Boston Journal of Commerce advocates the idea that the United States Government should buy or take possession of all the railroads of the country under the right of eminent domain. As the railroads themselves would as a whole earn the interest on the expenditure, he holds it would involve really but little expense to the Government. He is justified in this by the figures of Mr. Poor, who shows that the net earnings on our railways for 1872 is 5.2 per cent. on \$55,116 estimated cost per mile, which includes, of course, a good deal of sunk capital that the present holders of the roads are not entitled to interest upon. He would leave the roads to private parties, under conditions favorable to the interests of the people. "While, in private hands," he says, "the tolls will be certain to be kept up to such rates as to pay dividends of 10 or 12 per cent. at least, the Government would desire only 5 or 6; that is, merely enough to meet the interest on its bonds."

Charles Francis Adams, jr., is in favor of the Government's regulating railways by owning a part, and running these so as to compete with and lower the rates of private roads, as is now done by Belgium. Ultimately he regards it as "almost inevitable that the National Government must, soon or later, and in a greater or less degree, assume a jurisdiction." As the present policy of Massachusetts, which has already several millions interest in the Hoosac tunnel, he advocates the acquirement of certain roads and operating them in competition with private lines. He claims that only in this way can competition be introduced as a permanent regulator in railway transportation; that only in this way can we obtain free trade, the free working of the law of supply and demand, from railway monopolies.

Regulation of our existing through-routes, by improving and increasing the waterways of the country, is a favorite idea in many quarters. A ship-canal at Niagara, a canal connection of the Ohio and James Rivers, a canal connection of the Tennessee and Savannah Rivers, the improvement of the mouths of the Mississippi, are among the most prominent. It is probable that these could be made quite efficient in regulating commerce a part of the year. But water evaporates and freezes up, iron rails never do, and I look to the railroads as the future carriers even of cheap freights. Mr. Adams said that steam—meaning steam land locomotion—"abolishes the Mississippi River." It does not do that, nor will, until grain and coal can be carried by rail for 1 mill per ton per mile. But rivers and lakes and canals lose their prestige and importance, and railways alone, I take it, can regulate railways.

Regulation again is suggested and sought by dividing, practically, the road and the rolling-stock, making one company the owner of the road, and perhaps of the motive-power, and another owner of the cars carrying the freight and passengers, thus securing, it is hoped, competition of different transportation companies on the same road, just as that of teamsters conveying goods in wagons is upon turnpike-roads. The various "colored lines," were they not perverted to baser uses in the hands of rings

within the railway corporations, would speedily become something of this kind if they had the right of transit over all roads.

I have now given you some idea of the history and drift of experience and conviction concerning railway legislation. In the light of these experiences and speculations, and in view of the peculiar government of the United States—republican federalism—I shall give you my own impressions of what is desirable and best.

First, I would favor a general system of national highways, limited, at present, to three north and south and four east and west railways. If you will take a map of the United States and draw a line from Omaha, through Davenport, Chicago, Toledo, Cleveland, and New York, to Boston; another from Lawrence, through Saint Louis and Cincinnati, to Baltimore; a third from Little Rock, through Memphis and Knoxville, to Norfolk; and a fourth from Shreveport, through Vicksburgh, Jackson, and Montgomery, to Port Royal, you will have an illustration of east and west roads equally distributed and connecting most of the large centers of business with the best sea-ports of the Atlantic. Draw other lines. One from Bangor, through New York, Philadelphia, Baltimore, Washington, Lynchburgh, and perhaps Atlanta, to Pensacola; a second from Cleveland, through Cincinnati and Nashville, to New Orleans; a third from Chicago, through Saint Louis and Little Rock, to Galveston, and the same is done with north and south connections. A fourth may, ere long, be suggested from Duluth, through Saint Paul, Des Moines, and Leavenworth, and so southward to Indianola or Brownsville. Extensions of the east and west lines and new north and south lines could, if needed, ultimately gridiron our whole territory from the Atlantic to the Pacific. But these, and even the special lines I have named, should be constructed or condemned only so fast as the States through which they run feel justified in assuming the expense of their construction. At present, the great demand is for a new northern freight route from Omaha to the sea-board. No entirely new route to the sea-board has been constructed, as Secretary Randolph, of the Chicago Board of Trade, tells us, for fifteen years; and yet the local railways of the Northwest, feeding these through-routes, have at least trebled their mileage. Hence the demand made at Chicago and at New York for increased facilities; and this line, in some shape, will be built before many years. A Saint Louis and Baltimore route is less demanded, because more reliance is placed on the competition supposed to be provided by the existence of the Mississippi River. Yet the commerce of the Upper Mississippi is already controlled by a monopoly that owns or controls all the boats running in that trade, and the commerce of the Lower Mississippi is impeded by causes of a similar character; and sooner or later the more southern trade must ask for transportation that shall not be controlled by single companies, but by Government. Again, there is not the present demand for north and south lines that will exist when emigration has measurably filled up the country. Then will come the more natural exchange of products between different latitudes—sugar for wheat and cotton for corn—and the north and south railways will do the great carrying trade.

But meanwhile, I say, let the roads I have mentioned be built so fast as the several States and people through which they run are willing to make the investment, subject to the condition of working at minimum rates. The seven roads I have suggested would have an aggregate mileage of about eight thousand miles, and would intersect about twenty-five States. These twenty-five States would own, or at least control, the bonds issued to build their respective proportions of these roads. The directorship should be vested in these States, according to the amounts contributed by each to build its portion. These States should be guaranteed a certain interest on the investment by the General Government, and the whole system should be constructed and managed, as provided by national law, under the supervision of directors chosen by these several States. In this way we would secure the co-operation and mutual interest of National and State governments, and build roads that could not be sold out by private monopolies.

Secondly. In like manner I would like to see each State control the railways within its own borders in this manner, provided the other modes fail. I would like to see them have the power to build such roads as might, if they desired, connect them with these national arteries of commerce on the same condition of minimum rates and public service.

Thirdly. And in like manner, the power ought to be invested in every town, city, and county of the country to build train, horse, and steam railways, just as they would other roads and thoroughfares. In other words, to carry to its legitimate conclusions the principle that a railway is a highway, and just as much to be made and controlled by public authority as our common roads.

There are strong objections to this idea of governmental responsibility and control. It involves large expenditure; but not nearly so large amounts as we give away to secure the railways that oppress us. It will bring more or less corrupt management, but not greater than has attended our efforts to work by private companies. It is better than to build the Illinois Central and donate it to an untaxable corporation, on condition of our receiving 7 per cent. of the gross earnings. It is better than to give

away 200,000,000 acres of public lands for the privilege of being fleeced a few years earlier. It is as well as to pay from 20 to 25 cents extra tax on every bushel of grain or its equivalent that goes to the seaboard. The amount paid over and above fair cost of transportation annually, from Illinois alone, would pay the interest on \$50,000,000. It cannot be more corrupt than the Credit Mobilier, or the New York and Erie management. The Post-Office Department is not only a political machine, but run by transient men of uncertain ability; yet it supplies mail-matter to the whole country with promptness, cheapness, and accuracy, compared with private express companies. Upon the whole, I do not find that the large and unwieldy corporations have much to boast of, except in the few cases where a man of great energy and ability is at their head.

Personally, I am driven to the conviction that Government railways of some kind promise the best ultimate relief. But I heartily join in the desire that other and more local schemes of relief may be pushed forward to an early completion, if they promise to partially succeed in affording relief from a despotism that now binds hand and foot the producers of the fairest and most fertile spots of the new world. The agricultural empire of the Northwest, consisting of ten great States, whose area is 600,000 square miles, only a small portion of which is in cultivation; whose population is one-third of the 40,000,000 that make this mighty republic; which produces three-fifths of the wheat and nearly two-thirds of the corn of the country, lies paralyzed because of the railway despotism that guards the outlets of her commerce.

Another "march to the sea" lies before us. A thousand miles away are the shores and the people that suffer for the bread of which we have more than enough. Another Andersonville, not of the victims of the slave power, but of a despotism equally cruel and relentless, remains to be reached and its inmates fed. But the farmers of the Northwest are coming out in mighty array. They spread out in marching columns that cover the land from Minnesota to Missouri, moving on with firm purpose along the great chain of lakes, through the passes of the Ohio, and down the Great River to the sea. They ask only "equal and exact justice to all men;" that cost, not combination, shall fix the price, and competition, not conspiracy, shall rule in the trade and transportation of the country. This they must and will have. They go forth to battle with an unscrupulous enemy, but the gates of hell shall not prevail against them, for they are right.

New arrivals

The committee on credentials reported the following additional names of delegates entitled to seats: A. S. Myers, J. W. Hunter, D. C. Perry, D. B. Weir, R. M. Pritchard, of Illinois; J. M. Pinkney, J. P. Just, James Holland, of Iowa; Henry Griswold, of Wisconsin.

Reasonable rates.

Mr. M. M. Hooton, of Marion, discussed the means of estimating reasonable rates. The money panic was caused because the laws of equity were violated. Greedy speculation had corrupted all channels of trade, and the few were made rich at the expense of the many. Punishment came sooner or later. There were two classes of investments, the productive and non-productive. Productive investments were those which created and increased the aggregate wealth of the country, and the non-productive investments those devoted to the manipulation of industrial products. When the wealthy balance between these two classes of investment was lost, the result was detrimental. He pictured a community ruined by reckless speculation, which diverted the money of the country from legitimate channels of trade, and invested it in railroads and telegraphs through uninhabited regions. Banks advanced money on securities which in time of panic could not be realized upon. The non-producers of the country had so manipulated the Government as to get from it vast subsidies and monopolies which had been used, not for the public good, but to corrupt legislatures and Congress. Stock was watered to more than double its real value, and the money of the country being diverted from its legitimate function. The crops of the country could not be moved at remunerative prices. The people had come to their bottom dollar. They had discovered that for years they had been paying rates on railroads alone of nearly \$800,000,000 above their cost. These frauds covered billions of dollars held for private gain at the expense of the industries of the country. The producers would hardly go on paying 10 or 15 per cent. on fraudulent certificates and bonds in which there never was a dollar invested. The people were tired of this big confidence game, and would stand it no longer. The stock markets and finance should be wholly purged of every dollar of false stocks, and reduce the value of the real and false to the amount of the real. This involved the breaking of many banks, brokers, and dealers, as well as many innocent laboring men, but it could not be avoided. To continue the present state of

things was only to defer the inevitable retribution, and make it worse when it did come. There was reason to fear that the worst of the crisis was not yet passed. The struggles of the financial cormorants who had amassed millions through frauds would be terrible before they could be made to disgorge \$2,000,000,000. To remove false stocks from the business of the country would necessarily cause great commotion, but it would have to be done before there would be a solid basis of finance. When the crisis was passed the money of the country would be used in legitimate trade, would be sufficiently abundant to pay fair prices for agricultural products, and the country would enter upon an era of prosperity never equaled. The voters should see that every officeholder, whose hands were tarnished with monopolies, credit mobiliers, salary-grab, back pay, or forward pay, was retired to private life, or to the penitentiary. [Applause.] Reforms necessarily moved slowly when the officers of the Government were bought and sold like cattle in the open market. As the producers of the country had to pay the income on the unproductive investments that any rate which exceeded the producer's rate of income would be unreasonable. The legal rate of interest might not be reasonable, as it might be too high or too low. It was arbitrary, and therefore had none of the elements of reasonableness in it. He denounced the iniquities and corruption of the times, and concluded amid applause.

THE RESOLUTIONS.

The committee on resolutions reported, through Mr. Beman, of Iowa, as follows:

The duty of a government is to protect its people. Capital directed by unscrupulous minds reaps the profits of their labor. Men of great wealth revel in luxury, while those who earn the money are destitute of the comforts of life. Our State legislatures have made laws depriving us of our land, for which we have a title from the General Government, for the benefit of railroad companies, because it seemed for the public good. Subsidies have been granted them, and Congress has, with a lavish hand, given them public lands—the people's inheritance—and the result is extortion, oppression. Therefore,

Resolved, By this convention, that we most respectfully, but earnestly, request Congress to, without needless delay, pass a maximum freight and passenger law regulating tariff between the States, and our legislatures a law regulating it within the States; and we hereby protest against the further granting of any subsidies whatever to private corporations of any kind.

Resolved, That experience has proved that freight by water is cheapest, and we most respectfully ask that Congress relieve us of our burdens speedily and take measures to open water-routes from the Mississippi to the seaboard.

Resolved, That to lessen the burdens of transportation is to, as far as possible, do without transportation, and, therefore, we ask and urge our people to do all in their power to create and sustain with patronage home manufactures.

Resolved, That we hail with pleasure the prospect of the early completion of the double-track Continental Freight Railway from the city of New York to Omaha, which promises that grain shall be transported over said railway at a cost not exceeding 8 mills per ton per mile.

Resolved, That debt should ever be held as one of our greatest enemies; that it deprives us of manliness, and in a measure makes us slaves; that to live within our means, however small, to pay as we go, will contribute to our success; recognizing the fact that the people are in earnest, we would urge them to free themselves of this curse, so that if a final struggle must come between the people and monopoly, our houses must be in order, and we the better able to withstand it.

Resolved, That no one industry can be protected by legislation except at the expense of all other industries, and that we are opposed to all special legislation.

Resolved, That we recommend the thorough organization of the farmers of the country in local and State organizations for the purpose of reforming great abuses, and dealing out equal and exact justice to all men.

THE RESOLUTIONS DEBATED.

The question was upon reading the resolutions and passing upon them singly, and the ayes and noes being indecisive, a count gave the vote to the ayes, and the preamble and first resolution, against protective tariffs, was then read and unanimously adopted.

The second, asking for water-routes, was read, and a motion to lay on the table was put and lost.

An amendment was put to alter the phraseology of the resolution, so as to add water-routes from the Mississippi by a ship canal to Lake Michigan.

Mr. Dore, of Bureau County, did not want this question to be passed upon without consideration. There were persons present prepared with figures as to water and railroad

transportation routes who ought to be heard. They had time before them to ponder the matter, and they should deliberate well before taking any action.

Mr. Lloyd, of Henry County, thought the resolution should be worded so as not to say that water communication is cheaper than rail; there was no need to make that declaration.

Mr. Morton, of Nebraska, wanted this resolution well considered. As a class, they are injured by class-legislation. The experience of the Northwest was that when the Government took hold of a railroad the people suffered. He opposed the idea of Congress being asked to afford relief. It was what they were opposing—relief of classes by act of Congress—and it came with bad grace from them, who were opposing class-legislation, to ask for it.

Dr. Pennington, of Whiteside, thought they should consider the question well before they decided. The resolution asked the Government to open these water-ways by the aid of public money. He did not wish to throw cold water on any private enterprise, but they should not ask Government to tax the people millions for that purpose.

Mr. Lewis, of Iroquois, desired present relief, and he believed the only object of the resolution before them was to get the country further into debt. He didn't like it.

Mr. H. O. Wheeler, of DuPage.—I trusted that this convention would consider well before committing itself to the support of any new schemes, or permitting itself to be captured and strung upon the tail of any wire-pulling demagogue's kite. If the farmers had undertaken in truth and sincerity to cleanse the Augean stables into which land-grants and subsidies had converted our legislative halls, they had work enough on hand to last for some time to come, without going into the land-grabbing and subsidy business themselves, or allowing themselves to be decoyed into it by anybody else. He moved to postpone indefinitely the further consideration of the resolution.

Mr. A. H. Dolton, of Cook, as one of the committee reporting the resolution, explained the objects of the committee. They thought that water was the cheapest mode of transportation available, and they simply asked Congress to enable the producers to avail themselves of it. The resolution asked for just what every farmer asks and wants.

Mr. Connelly, of the Workmen's Association, New York, maintained that this resolution did not ask for class-legislation. If this resolution was not what was wanted, then all their proceedings must be a delusion. The people should not only request, but demand, that these water-routes should be opened, and if there was any other agency than Congress by which this could be done, he did not know it. The interests of farmers in the West and laboring men in the East alike demanded the opening up, not only this route by the Mississippi, but by all other water-routes.

Mr. Lloyd then submitted his verbal alteration of the form of the resolution.

Mr. Beaman, of Iowa, chairman of the committee, then spoke in defense of the resolution in its original form. He insisted that private enterprises had swallowed up \$2,000,000,000 of public moneys, and yet they objected to a few millions for the good of the people. He scouted the idea of the resolution calling for class-legislation.

Mr. Green, of McDonough County, hoped the original resolution would pass, as experience had shown water-transportation to be the cheapest.

Mr. Roessler, of Shelby County, lived 175 miles south of Chicago, and wanted to know if the resolution would benefit his people. He was not sure whether it meant communication by the Mississippi, which would benefit his constituents, or communication by the lakes, the benefits of which were not so apparent.

Mr. Floyd answered, finally, that his amendment contemplated several water-routes.

Moved to lay Mr. Floyd's substitute on the table.

Point of order raised that tabling the substitute carries the original resolution with it.

The chair thought it did not, and the substitute was tabled by an overwhelming vote.

Mr. Flagg offered the following as a substitute:

Resolved, That we request Congress to take such means as shall give cheaper water-transportation between the West and the seaboard without the expenditures of large appropriations of money.

Mr. Lawrence asked how much cheaper transportation would be after all these canals were built than before?

A motion was made to adjourn.

Communications.

The president read a communication, as follows: From President Culver, of the board of trade, offering the convention the freedom of the exchange and reading-rooms of the association.

Winborn Lawton, from Charleston, S. C., sent an eloquent address, commencing by referring to the want of just and cheap transportation, and the evils of railway monopoly, quoting the London Quarterly of April last very extensively on the latter sub-

jest, showing the action taken by the British Parliament in the premises. The writer goes on to deprecate any interference of a "governmental nature." He gives the following table of comparative rates and fares in Europe:

* Average rates charged to first-class passengers for a journey of 100 miles in the twelve countries of Europe enumerated.

In Belgium.....	£0. 6s. 6d.	\$1 56
In Italy.....	10s. 6d.	2 52
In Spain.....	11s. 9d.	2 82
In Prussia.....	13s. 0d.	3 12
In Denmark.....	13s. 0d.	3 12
In Austria.....	13s. 0d.	3 12
In France.....	13s. 4d.	3 20
In Norway.....	13s. 4d.	3 20
In Switzerland.....	13s. 6d.	3 24
In Holland.....	14s. 0d.	3 26
In Portugal.....	14s. 2d.	3 40
In Russia.....	14s. 5d.	3 46
In United Kingdom.....	18s. 9d.	4 50
Total.....	8 9s. 3d.	40 62

(specie) for 1,300 miles, being an average of 3 cents per mile, the result of which figures is to leave on the writer's mind the impression that even Europe, with its dense population and persistent efforts at reform, has failed to secure comparatively cheap transportation; and that the oppressive rates prevailing in the United States are far more equitable than those of the countries quoted, except, perhaps, in the rates of passenger fares. These facts stated, he refers to the new narrow-gauge railroad systems, and looks upon them with much favor as one means of solving the railroad problem, and concludes as follows: "The great point for the American farmer to achieve is independence, by marketing his produce. To secure this competition in markets and in transportation is essential to success. That the South needs, and could consume many more bushels of grain and pounds of meat, by direct and economical routes, is too patent a fact for me to tell you, and she only waits for the Northwest to take the initiatory steps toward building direct roads to contribute her proportion of land and money. The organization of an American Farmers' International Transportation Company, with a capital of 1,000,000 shares of \$25 each, payable in installments, will do more to solve the transportation problem and unite our people than years of committee and commission work. Members of the convention, I appeal to your patriotism, to your good sense, to move at once in this matter, and not defer it any longer. The eyes of Europe are upon you; you have been accused of agrarianism, and vilified as mischief-makers! It is for you to prove by your work that you mean business."

Adjourned.

At 12.20 the convention adjourned until 1.30 p. m.

AFTERNOON SESSION.

Discussion on the resolutions continued.

Mr. Perry, of Marshall, when the convention re-assembled, moved to lay Mr. Flagg's substitute on the table, and the motion prevailed.

Mr. Faris, of Union, moved to insert "and along," after the word "from" and before "Mississippi," in the resolution. It was tabled.

Mr. Keeple, of Boone, moved to table the resolution. Lost.

Mr. Flagg believed the resolution should be amended so that it would not seem to limit its operations to canals from the Mississippi to the East.

Mr. Faris believed they should consider the interests of the great State of Missouri, and enable her citizens to get to Liverpool by way of the Gulf.

Mr. West, of Iowa, moved to strike out the statement that water-transportation was the cheaper.

Several motions were made, including one to improve the channels of Salt River.

They were all kicked out.

Mr. Boone, of Jo Daviess, offered a substitute demanding the construction of railroads, and the improvement of water-communication from the interior to the seaboard. He was tired of paying taxes, and getting nothing for them. He wanted the money laid out for the benefit of the people. He looked forward to the time when all their affairs, including transportation and finances, would be managed by co-operation.

Mr. Dolton, of Cook, believed in opening all the avenues of transportation by water

as well as by land. They should not be quibbling and exhibiting jealousy of each other. There might be men in the convention in favor of railroads who were opposed to anything that would compete with them. Let them have all the new routes they could get.

Mr. Harris, of Iroquois, believed the money would go into the hands of monopolies. He would never give his consent to have Congress appropriate another dollar of his money without his consent. Congress was too ready to appropriate money. They wanted a new Congress of honest men. That's where they should begin.

Mr. Morton, of Nebraska, was opposed to asking Congress to do anything more for them, but was in favor of asking Congress to do no more for monopolies. [Applause.] Why did they not ask Congress to establish and run flour-mills for the benefit of farmers? [Applause.]

The chairman hauled the convention over the coals, and observed that there should be no frivolous remarks or motions. They represented the Northwest, and should feel the responsibility and dignity of the trust reposed in them. [Cries of "question."]

Mr. West, of Iowa, conceived there was a wide difference between regulating railroads and running grist-mills. He did not believe Congress was all rotten, for they elected the Congressmen. The men who charged rottenness were generally rotten themselves.

It was moved to refer the resolution to the committee. Lost.

Mr. Dore, of Bureau, was opposed to saying to Congress that the country should go into the digging of canals.

The chairman, taking the floor, said he would regret very much if they went home and had it said that they refused to adopt a simple resolution like that. The railroads would chuckle and crow, and the people would believe that the railroads controlled the convention. What would the Northwest do without lakes? Would they throw them away? Suppose they were frozen in the winter. Freeze them up in the summer, also, would they? Did they want to close them up? Did they suppose the Erie Canal was of no benefit? Without that canal and the railroads they would be burning corn all the year round. The improvement of canals would not stop the building of railroads. He wished to add his own conviction to the testimony of others that the resolution should be passed. [Question, question.]

The previous question was ordered.

The substitute was adopted as follows:

"We demand the construction of railroads and the improvement of water-communications between the interior and seaboard, the same to be owned and operated by the General Government, for the purpose of affording cheap and ample transportation, and to protect the people from the exactions of monopolies."

Mr. Richards, of McHenry, wished it understood that they did not want too much interference from Government. Chicago built herself up in two years, and the Government had not been able to get the foundations of its custom-house laid in that time.

Thanks.

Mr. Flagg offered a resolution thanking D. Worthington, A. H. Dolton, and W. W. Corbett for securing a place of meeting to the Chicago Pork Packers' Association, and to the Pacific and Briggs Hotels for contributing to the expense of the meeting.

Adopted.

Home manufactures.

The third resolution, relating to home manufactures, was carried.

Continental railroad.

The fourth resolution, relating to the double-track continental freight railroad, from New York to Omaha, was then offered.

Mr. Coffeen offered a substitute, to the effect that it is imperatively necessary that the people obtain from the National Government assistance or credit for the purpose of building for themselves a double-track freight railroad near the line of Kansas and Nebraska, as near an air-line as possible to the city of New York.

M. M. Hooton, of Centralia, would indorse any national scheme for transportation from the West, but he did not like adopting any resolution or substitute that would seem to indorse any particular scheme.

The substitute was again read, put, and by unanimous vote laid on the table.

The fourth resolution was then put, and lost by a unanimous vote.

Debt.

The fifth resolution, urging the people to free themselves from the curse of debt, was carried unanimously.

Special legislation.

The sixth resolution, opposing special legislation, was adopted unanimously.

Organization.

The seventh resolution, urging thorough organization, was carried unanimously.

Illinois railroad law.

Mr. Lawrence, of Warren County, read the following, which was adopted :

Whereas the legislature of Illinois, at its late session, passed a law defining and providing for the punishment of extortion by any railroad companies within this State, fixing the penalties at from \$1,000 to \$5,000 for the first conviction of any railroad company; from \$5,000 to \$10,000 for the second; from \$10,000 to \$20,000 for the third, and at \$25,000 for every subsequent conviction; which sums, when collected, shall be paid into the treasury of the county in which conviction shall be had, for the use of said county; and whereas, upon due information furnished, it is made the duty of the railroad commissioners to cause suits to be commenced and prosecuted for said penalties, at the expense of the State; and whereas the question as to extortion in any such prosecution is one of fact to be decided by a judge: Therefore,

Resolved, That the people of this State have a remedy for the extortions to which they are subjected by the railroads within their reach, and we recommend to the various farmers' associations herein to furnish such information to the railroad commissioners, without delay, as will warrant the prosecution of suits for the collection of penalties to the full extent to which the railroad companies may be liable.

Resolved, That we recommend to the farmers and citizens of other States to secure such action from their respective legislatures as will furnish them similar protection against extortion from railroad companies within their several States.

A national committee.

Mr. Flagg offered the following, which was adopted :

Resolved, That the president and secretaries of this convention be authorized and instructed to appoint a national committee of five, and State committees of three, from each State, Territory, and province of this country, whose duties shall be the pressing upon our Congress and their respective legislatures the importance and necessity of speedy and efficient legislation controlling railroads, and other transportation companies.

Adjournment.

It was moved to adjourn *sine die* when they did adjourn.

Mr. Boone, of Jo Daviess, said they could not afford to adjourn *sine die*. The producing classes sustain the same relation in modern society as serfs did in the days of history. This was to be considered as an agricultural congress.

Several members called the question, and Mr. Boone proposed an adjournment for one year, to the same time and place.

Mr. Flagg proposed an adjournment, subject to the call of the president of the State Farmers' Association, which, he explained, would not prevent their meeting this evening if they desired. And the resolution was adopted.

Co-operation.

The Rev. William R. Alger, of Boston, spoke on the subject of co-operative buying and selling. The great necessities of mankind were--first, air; second, food; third, warmth, shelter, clothing, and fire; fourth, light; fifth, society. Those are the primal necessities in their order. When the five are fulfilled the common desire of mankind is to enlarge our intellectual powers, so as to expand the powers of the race. Looking back, we find the race shuddering in dark caves, preying on each other; the race had gone on step by step until now, when innumerable signals of light appeared; one was the formation of the International Workingmen's Association, and the second that of the Granges. It was said that an earthquake took the nerve out of the strongest man. Now, we see for the first time in the history of the world, in the linking of hands of the farmer and mechanic, the upheaving of the elements of industry. They did not want antagonism but sympathy and intercommunication. The greater these the swifter the happy result. The laboring classes have been different from the governing classes by limited knowledge. Thus far the rulers have had the advantage over the laboring classes, and, until the present age, they have monopolized the riches, the pursuits, and the thoughts of the world. A new age of instant communication is drawing upon us. At one time a king--take Rothschild--had his relays of horses, and news was conveyed

directly to his ear exclusively. Now, the newspaper carried to the door of every poor man a thousand times more information than any sultan or king ever could command. If the Government continues to be run by any particular class of men, it will be the fault of the voters. Allow no man to be elected to office who will not study the questions of interest to the American people, or who will not do his duty. The moment you inaugurate a movement superseding party politics with social science, the present troubles will cease. A time would arrive when harmony would be produced by the aid of science.

A vote of thanks was returned to Mr. Alger for his eloquent address.

Mr. W. H. Greene, of McDonough, urged further State organization, by which he felt sure a good work could be accomplished. Adjourned until 7 p. m.

EVENING SESSION.

The convention re-assembled at 7.30 p. m.

A communication was read from the National Board of Trade, inviting the convention to attend their sessions.

The invitation was accepted, and thanks were returned.

The Huron and Erie Ship-Canal.

Mr. F. C. Capreal, of Canada, the representative of a company organized with a view to shortening communication with Europe by the construction of a ship-canal connecting Lakes Huron and Ontario, stated that the construction of this canal would lessen the length of route by some 800 miles, and increase the value of grain 10 cents a bushel. He was convinced that water was as superior to rail as gold is to silver, and would be willing to convince a committee appointed by the meeting of the fact. He showed that almost all the benefits arising from such a canal would be with the western agriculturists; the only profit accruing to the Canadians would be the toll charged passing vessels. With this canal constructed, and the locks of the Saint Lawrence Canal enlarged, sea-going vessels of 1,200 tons burden could load in Chicago for a straight trip to the sea. We stated that a subsidy of 10,000,000 acres of land could be obtained, if only the western agriculturists would be willing to aid the movement by issuing detentures. The speaker referred to a previous occasion when he had in Chicago advocated the building of the canal. At that time its construction was advocated in eloquent terms by the then lieutenant-governor, William Bross, and several other citizens. He was confident that, if the Great West only helped him, he would, in a few years, be able to welcome the crowned heads of Europe to the opening of the Georgian Bay Canal.

Crop statistics.

A delegate said he would like to bring before the meeting the question of the practicability of getting the crop statistics of the State.

The secretary said that he believed it could be done by school-sections, and would be successfully accomplished in the future.

Co-operative transportation.

Mr. Gilbert, of the Chicago Evening Journal, made an address on the subject of the co-operative transportation of cereals from the West to the East. He complained of the way in which the railroads were conducting business, and suggested that the railroads and rolling-stock be owned jointly by the railroaders and the farmers, the latter providing the rolling-stock, and receiving therefor 30 per cent. of the profits of the road.

The Huron and Ontario Ship-Canal again.

Mr. Frank Turner, associate of the institution of civil engineers of England, engineer of the Huron and Ontario Ship-Canal, stated that the canal, which would only be 60 miles in length, and notwithstanding many assertions to the contrary, could be easily built, as had been stated by eminent engineers and contractors in London. The estimated cost of the canal, without allowing for interest, was about \$36,000,000. The Canadian government were ready to grant 10,000,000 acres of land to aid the enterprise, if only the United States would do the same thing. He referred to the proposed Ottawa and Red River route, but said the engineering difficulties of that route were very great.

On motion, it was resolved that Mr. Capreal be requested to place his plans for cheap transportation in connection with the Huron and Ontario Ship-Canal in such form that they may be incorporated in the printed proceedings of this convention.

Settling the price of pork.

The following resolution was then moved and seconded:

Resolved, That this convention recommend to the farmers of the Northwest that, in order to carry out in a practical manner the spirit and the letter of co-operation, they will hold from the market their live products until the price shall reach such a figure that the producer shall receive the legitimate fruits of his labor, and we consider that \$5 per 100 pounds, gross, is a just and fair price both to producers and consumers.

A lively but very one-sided debate followed on the merits of the resolution, which was finally adopted.

Railway legislation.

The following report was submitted and adopted:

The committee appointed to report to the convention the effect upon producers and shippers of the legislation of railways in Illinois, and whether they advise similar legislation in all the States, have had the subject under consideration, and would report that its effect has not as yet been such as its friends contemplated; that the cost of transportation has not been reduced to the extent that was expected when the law was first passed; but, when the railroads of the State are compelled to a strict observance of the same, it is believed that favorable results will follow. Your committee respectfully represent, on the advisory portion of the resolution, that they are not prepared to advise other States, but believe that the people of the other States of the Union would be benefited by the passage of a law similar to the law of Illinois, or a better one, if they can.

M. B. LLOYD,
M. M. HOOTON,
L. F. ROSS,
Committee.

The meeting then adjourned *sine die*.

Examination of SAMUEL P. TUFTS, representing the Northwestern Farmers' Convention, recently convened at Chicago.

MR. TUFTS. Mr. Chairman, the views I propose to submit are derived from intercourse during the past year, in the progress of our organization in Illinois, with the people in their local organizations as clubs, and in our several State conventions, of which we have held three, the last having been held in Chicago during the present month.

Fully concurring in the conclusions and statements of facts bearing upon existing and new facilities of transportation, and the expenses thereof, set forth at length by my colleague, Mr. Flagg, in the above paper, I beg leave to submit for your consideration the following additional recommendations:

1st. I would recommend the passage by Congress of laws establishing a maximum rate of 3 cents per mile for first-class passenger trains, and such maximum rates for freight transportation as will insure a just and reasonable return on the capital actually invested therein, thus affording a partial relief from existing abuses.

2d. The sentiment of the farmers of the West is certainly opposed to all special or class legislation by Congress, or the granting of subsidies for manufacturing or transportation purposes. I would, therefore, recommend such congressional legislation as will prohibit the enactment of laws permitting these abuses.

3d. Fully recognizing the delicate nature of the proposition, yet as the farmers of the West are rapidly losing confidence in all propositions for relief emanating from Congress, from the fact that so many of its members are reputed to be pecuniarily interested in the commercial routes of the country, I would, therefore, submit for your consideration the propriety of enacting a law of Congress, the effect of which will be to render ineligible to election thereto, all persons who are, either directly or indirectly, interested pecuniarily in the construction or operation of any of the commercial thoroughfares of the country.

By Mr. SHERMAN:

Question. You ask Congress to pass a law making a maximum rate not exceeding 3 cents per mile?

Answer. That is for first-class passenger travel.

Q. That is the law in Ohio. In some of the States the maximum rate is much lower than that now, as in the case of the State of New York on the New York Central, where the rate is but 2 cents a mile. I wish to ask you whether you have considered the difficulty of making any general rule that can possibly apply to the railroads of the United States?

A. I arrived at this conclusion of 3 cents a mile a good deal from our legislation in Illinois and from the intercourse between our members of the legislature and the railroad presidents in the State of Illinois.

Q. Then your resolution was rather that in the State of Illinois the maximum should not be over 3 cents a mile? That would conform it to the law of Ohio?

A. Yes, sir; and I think it is sufficient for any State. To be sure, there are, perhaps, some short lines of road that would, perhaps, require more. In our State the law heretofore has been to make certain grades, allowing certain roads to carry at such a rate and certain other roads to carry at different rates in proportion to their receipts, but it has been very difficult to arrive at any conclusion, because all the evidence furnished in reference thereto must come from the railroad companies, and our committees in investigating this matter have found it difficult to get at accurate reports. When the law provided in our State for 3 cents per mile, Mr. Harris, of the Northwestern Road, and Mr. Newell, of the Illinois Central Road, were present in the committee during the conversation and framing of the law, and it was framed at 3 cents. It was proposed to submit that to the legislature and put it through, and they both said, "If you will enact a law fixing the rate at 3 cents, we will come to it and will use our influence with all the roads in the country, because we think that it is a sufficient rate for our class of roads;" that is, the first-class roads. I presume that they of course would like to have it fixed at that rate and have all the other roads that could not perhaps carry it handily for that come up to it.

Q. You have not answered my question exactly, whether you have considered the difficulty of fixing a uniform rate by law of the United States, because our laws must be general, and we must have not one law for Illinois and another for other States.

A. I do not apprehend that Congress can pass a law for Illinois or for any given State. I may be misunderstood in that statement. It should have been inter-State rates. I do not apprehend that Congress can fix a rate for the State of Illinois; that is, for local rates in the State of Illinois, but for inter-State rates.

Q. Taking your proposition fixing it for all the States, how could you deal with Massachusetts and New York, who have already adopted a lower rate?

A. Fixing it at 3 cents does not prohibit any road from reducing it if they choose. Competition will regulate that.

Q. The State laws already prohibit that, but can Congress make a law that would operate only in one direction and not in another?

A. I would not ask you to prohibit them from running less than 3 cents, but that the maximum rate should be 3, and any State that saw fit to reduce it to a less rate should have the privilege of doing so, and competition would bring it down as it is in New York.

Q. Would not the prohibition of a rate not exceeding 3 cents be in effect a law allowing them to take 3 cents?

A. Yes, sir; it would virtually, taking into consideration that competition might reduce it. I think our western farmers would be satisfied, and perhaps the passenger travel of the country generally might be, at a maximum rate of 3 cents a mile.

Q. But the people of New York would not be satisfied with that, because there they have a less rate.

A. Well, they would not raise it to 3. They could not bring it up. Competition will necessarily keep lowering it all the time.

Q. Have you considered, also, the effect of running a railroad through a new and sparsely-peopled country, where the amount of business is necessarily small?

A. I do not think they ought to have any roads in those countries where they are not able to support one unless Congress builds it, and the whole people are taxed to keep it up. I do not believe in encouraging these short lines; I think they are a detriment to the people.

Q. Take the case of Iowa, which is comparatively a sparsely-settled State, although it contains a million of people. It has three or four railroads across the whole State, through a sparsely-peopled country, and their local business is comparatively light, and the actual expense of the roads now is fully equal to the income. What would you do in such a case as that? Have you considered the difficulty of applying a general rule to railroads having vastly different support?

A. I take this view of the railroad question generally, that routes will seek such localities as the interest of commerce and local trade will warrant, and only such. I apprehend that those roads would not have been built through Iowa unless the requirements of commerce made it necessary. If they do not pay, that is a responsibility which falls upon those who invest their capital. I do not think that the whole people should be burdened simply because a few individuals, or a local interest, should require roads passing through their States.

Q. Then let me come to another question: Suppose, taking the State of Iowa, that the law of the State chartering the railroad company and inviting capitalists to build the road in the State has stipulated that they should receive 5 cents a mile for passenger traffic, and has made it a part of the charter. Have you considered that difficulty?

A. It ought to be abrogated and wiped out.

Q. Have you ever considered the difficulty of abrogating it, under the Constitution of the United States?

A. There are different views of that. We hold, and that position is generally advocated by the farmers in the West, that all power rests with the people, and that they can remodel all laws which are made to affect them, and that the law of Congress that was passed in the interests of the people, which comes in conflict with charters that have been adopted even under the provision of the Constitution, would receive the support of the people and be sanctioned by popular approval.

Q. I am not speaking of the law of Congress, but suppose the law of the State has prescribed a fixed rate and the Constitution of the United States declares that no State shall impair the obligation of a contract.

A. They must alter their law. I do not apprehend that the contracts ought to be binding.

Q. The difficulty is, suppose that Congress should undertake to change the law and the Supreme Court should declare it to be unconstitutional under that provision?

A. Then do as they did in the Dred Scott decision. Wipe the Supreme Court out and get one that would decide it.

Q. We are all in favor of cheap transportation, but we desire to see the difficulties in the way of legislation. You would then reverse the decision of the Supreme Court by the popular will?

A. Yes, sir. I would not recommend of course any rule of law, or application of any principle of law that would disregard the provisions of the Constitution, not by any means.

By Mr. CONKLING :

Q. Then, how, as Mr. Sherman has asked, would you apply your remedy.

A. By remedying the Constitution.

Q. In the regular way?

A. Yes, sir; when it comes to that point. Mr. Sherman did not go as far as that. He only went as far as the Supreme Court. He did not go to the Constitution of the United States.

Mr. SHERMAN. Oh, yes, I quoted the Constitution.

Mr. TUFTS. Yes, sir; the provision of the Constitution, exactly, but when the Supreme Court made the decision it rendered the Constitution. Some courts will render it in one way and some in another. The Supreme Court would render a decision in accordance, perhaps, with what it belived to be the purport of that clause of the Constitution, but the people might think that clause did not carry that purport out, and they would want a court which would decide it the other way. If it requires a fundamental change of the general Constitution, that, of course, should be submitted in the regular way to the people and they pass upon it.

By Mr. SHERMAN :

Q. In the event of its not being adopted by the requisite number of States, would you consider that the Constitution must be obeyed at all events?

A. Oh, yes; otherwise the will of the people would not be the power of the land.

Q. In regard to building new railroad routes, have you fixed upon any route or any particular plan?

A. No, sir; our views in that regard have been that, so far as the building of new roads or the opening of the present water courses, or of new ones, due regard to the interests of the several sections of the country should be taken into consideration. The tendency of the discussion in our convention was, that, for instance, if the Niagara Ship Canal was opened, there ought to be a central and a southern route open.

By Mr. NORWOOD :

Q. You are speaking of water-routes now?

A. Yes, sir; and the same rule I apprehend ought to apply to opening railroads. If, as is now thought by some to be desirable, a double track route should be built from the east to the west in the north, I think that the south ought to have the same advantages in opening water-routes, which would operate equally in that line as any other. The view which we have taken has been that no section of the country should be regarded specially for special appropriations for the opening of routes to the injury of the other. The opening of the Welland Canal has been spoken of, and also of the Niagara Canal. The sentiment of our convention, I think, was decidedly opposed to this Saint Lawrence route.

By Mr. SHERMAN:

Q. That is not in our jurisdiction; we have nothing to do with it, you are aware?

A. No, sir; but it was a matter which came before our convention.

The CHAIRMAN: You mean you are opposed to the produce of the country being compelled to go out that way?

A. Yes, sir.

Mr. FLAGG. We had a representative from Canada at our convention. The convention included a Canadian representative so that that scheme was considered.

By Mr. NORWOOD:

Q. Have you considered what might be an injustice in applying the Procrustean rule of passenger fare to all railroads in a case like this? Take a railroad that cost \$20,000 a mile, and then take a railroad like the Chesapeake and Ohio Railroad, which has cost, in some parts of it, from \$200,000 to \$250,000 per mile, and that running through a wild and sparsely-populated country with the very heaviest grades, I suppose, of any railroad in the country; have you considered what might be an injustice in applying a rule of that kind, and compelling that road to take 3 cents a mile and nothing more?

A. Will not 3 cents a mile pay?

Q. I should think if it would pay that road that half a cent a mile would pay a road which cost only \$20,000 a mile.

A. Of course, it is, undoubtedly, true, that roads may be built over level countries, where the natural obstructions are not great, and the realization of profit at 3 cents a mile on the capital invested would be much greater than on others, but that is a fortunate circumstance to the persons interested in it. Some people can loan money at thirty per cent., others only getting ten, but that is not the natural sequence. I base my idea of 3 cents a mile upon the impression that that is a sufficient remuneration at the cost of the building of roads—the average cost of building roads in this country. Fifty-five thousand dollars per mile is what Mr. Poore puts it, in his manual, as the average cost of construction. A great many roads cost much less than that.

By the CHAIRMAN:

Q. I understand you that that is enough for the most costly, and that you will not compel the others to charge 3 cents a mile if they can carry for less?

A. Yes, sir; that is it.

By Mr. NORWOOD:

Q. Then you assume that 3 cents would pay any road?

A. Yes, sir; I think that 3 cents is sufficient.

Q. You would not want it applied in an instance, of course, where it would starve the road?

A. I do not think it would do it.

Q. Well, of course, it is upon that assumption that you have fixed 3 cents as your maximum price, I suppose you think all roads could live on that?

A. Yes, sir; I think they could live on that. We say 3 cents a mile. Try it. You have to test these things. Of course we cannot say definitely that it will do.

By Mr. CONKLING :

Q. Let me see if I understand you upon one point. You propose that Congress shall limit the tariff of freight on railroads, do you not?

A. Yes, sir; you say freights, we were talking about passenger rates.

Q. Well, sir; passenger freights; you propose that it shall limit the tariff of passenger freights on railways?

A. Fix a maximum rate.

Q. That is a limit?

A. Yes, sir.

Q. Do you state that proposition as applicable to all roads, or only to some roads?

A. As a general principle.

Q. Applicable to all roads?

A. Applicable to all roads.

Q. Now, do you propose to leave the States any option as to regulating the passenger tariff on railroads?

A. Beneath that, yes, sir; below the 3 cents.

Q. Then you propose, practically, that Congress shall say that no company shall charge, and no State shall authorize a railway company to charge more than 3 cents a mile for passengers?

A. I do not want to make a proposition that Congress should pass laws for individual States contrary to the provisions of the Constitution.

Q. No; but understand me. You stated, if I apprehend you aright, that your proposition was that Congress should say to all States, and all railroads alike, that there must be a limit.

A. I refer, especially, to those roads that are recognized as inter-State, over which Congress has the power to regulate. I do not think that Congress has any right to say what shall be the rate of a road in Illinois, although Congress might pass an inter-State law, fixing the limit at 3 cents. Yet that would not, perhaps, prohibit the State of Illinois from saying that certain roads should carry for 5.

Q. Your proposition is, not that Congress should limit the passenger tariff upon all railroads, but only upon those roads which carry passengers through one State to another?

A. Yes, sir; that is my proposition.

Q. Take the case of railroads which carry passengers part of the way through a State, and they go the rest of the way by water. Would that railroad fall within your view?

A. If it crossed States.

Q. Although it was all within a State, if a water-route ran in continuation, that would not fall within it?

A. No, sir; that would not fall within it.

Q. Then if the New York Central Railroad carried a man from Buffalo to New York, which would all be in the State of New York, your theory would be that Congress could not regulate that?

A. No, sir.

Q. But if the New York Central Railroad carried a man from Toledo to New York, although it carried him over the same route, then Congress could regulate it?

A. There is another view of that question, which is taken by these roads; they have connections all the way through. For instance, I want to travel from Saint Louis to New York; I buy a ticket here and go to New York. I may go through part of the way on one road, and part on another. My rule would apply, that if I go here into a ticket office to buy a ticket to New York the law must be, I must travel where they

propose to carry me. They propose to carry me over a different number of roads, and they should not charge more than 3 cents.

Q. Then, if I understand you, starting to go from Saint Louis by the New York Central, and I get on the same train at Buffalo, the company might charge anything the State authorized it to charge to me, but could only charge to you the 3 cents?

A. They would not charge me anything, because my contract was here. The company that I contract with puts me through.

Q. That is a matter of ticket agency, but my proposition is this: You mean that, in effect, this congressional law would subject me to the whole discretion of the company and the State, but that you would come in under the congressional enactment, and be subject to only a maximum of 3 cents on that road; that is your idea?

A. Yes, sir.

Q. Now, if you fix the maximum 3 cents, I will take the New York Central Railway again. The law of the State of New York requires that they shall charge but 2 cents to anybody. Would your theory, then, be that, notwithstanding the law of New York, they could charge you 3 cents?

A. Suppose that I buy a ticket here. Let me get at another feature of that; I buy a ticket here to go through, and I go over one of these roads in New York where the law of New York requires them that they shall not charge me over 2 cents. Do not the companies that run those roads receive a proportion, exceeding two, of the amount that I pay for my ticket from here to New York, passing over that road?

Q. That is not the question I put to you. Upon your own theory, under such a law of Congress, would that company have a right to receive as its share of that ticket, 3 cents a mile for the distance you travel on its road, under such a congressional law as you propose, fixing 3 cents as the maximum?

A. Yes, sir; I remarked before, the competition would regulate the States inside of it.

Q. I discard competition; I am talking about the law. So far as the law is concerned in the case which I am putting, your theory is, that in spite of the law of the State that road would be authorized to take its proportion up to 3 cents?

A. Yes, sir; that is any year together, clear through.

Q. How would that be as to me, if I went on in Buffalo to ride to New York; would they be confined, in your theory, by the State law, to 2 cents?

A. They would be confined by the State law.

Q. So that your idea is, that you would have two sets of regulations applicable to those?

A. Not by Congress.

Q. No, no; hear me. The act of Congress would allow them to charge 3 cents a mile to those coming from other States and passing through, and the law of Congress would override the State statute in that respect, but as to the man who travelled in the State of New York he would be governed by the State statute and they could only charge him 2 cents a mile?

A. Yes, sir.

Q. Do you think that would be advisable or desirable?

A. Yes, sir; I think where the rates in the States, as in New York, were 2 cents, the tendency would bring it down through the whole length to 2 cents.

Q. Although Congress may have said that they might charge 3?

A. Yes, sir.

Q. You spoke of Mr. Poore's average of \$55,000 per mile of the cost of road. You are aware that that average is made up of roads which cost twice that amount, as well as those which cost half the amount, are you not?

A. When you say that roads cost twice that amount, I should doubt it.

Q. I speak now of Mr. Poore's own table. Does not Mr. Poore's table show that that average is arrived at by including roads which cost twice \$55,000 per mile for the whole, or a part of their route, as well as roads that cost only twenty-two or twenty-three thousand dollars a mile?

A. I understand his average to be to include roads which cost more than that, as well as those that cost less.

Q. Do you not know that the cost of roads which he includes in his table go up to \$100,000 per mile for the whole or a part of their route?

A. No, sir.

Q. You have no information on that subject?

A. No, sir.

Q. But your theory is, that, discarding discrepancies of cost, they should all come to one rate, and that, as matter of fact, you say 3 cents is enough for the highest, and that they can live on that?

A. Yes, sir.

Q. Those that are below that, that is their good luck, and that is all there is about it?

A. Yes, sir.

By Mr. NORWOOD:

Q. You say you would not make this rule applicable where roads begin and terminate within the borders of the State?

A. I do not think that Congress has any right about that.

Q. Suppose Congress passes this law which you speak of, and the railroads, the most of which are within the borders of a single State, should resolve that they would sell no more through-tickets, and you start on a railroad in Illinois that ends in Illinois, and they charge you for passing over that road and drop you at the end of the route, you being on your way to New York, how would you regulate that difficulty?

A. In case the State passed a law that their roads should not sell any through-tickets?

Q. Take the case of Iowa, where they are allowed to charge 5 cents a mile.

A. Perhaps I do not understand your proposition. Was it that the legislature of the State should pass a law?

Q. I say breaking up all these through-routes, all ticket agencies, &c., and every road standing upon its own merits, then take the case of a railroad beginning and terminating within a State, when you want to go to New York, which will sell you a ticket over that road. When you get to the end of that road your ticket is out, and you have to buy another ticket to go over the next road, through another State, and so on until you get through. Now, when the railroads agree to break up all their through-connections in this way, how would you reach that difficulty?

A. I don't think that that is a supposable case. The requirements of commerce, I think, would prevent any such method of transportation as that.

Q. Do you not think they would do it if they desired to protect themselves?

A. They might attempt to do it.

Q. But could they not do it?

A. I do not think they could accomplish it.

Q. Could they not do it?

A. Yes, sir, upon this principle, that money is a sufficient power to do anything; if they could buy up the legislature of the States and require them to pass laws in their interest to that extent that would allow them to ticket only through a State, and not through another; but I apprehend that this law of Congress would come right in there as a check.

By Mr. CONKLING:

Q. And compel them to sell tickets?

A. Yes, sir.

By Mr. NORWOOD:

Q. But, by the laws of the States, many of these roads in their charters have the right to charge so much. Now, these contracts cannot be abrogated, you say, by any State?

A. They may not be abrogated by any State, although I do not believe in the inviolability of contracts or charters of railroad companies.

Q. If these roads disjoint themselves how would you regulate it by an act of Congress?

A. I think that an extraordinary case, like that, would require extraordinary power.

By Mr. CONKLING:

Q. What power would you invoke?

A. The power of Congress; the requirements of commerce, because that would interest the people at large in every State. They would become at once interested in a transaction of that kind and Congress must come in then and regulate it by law.

Continuation of the examination of Mr. FLAGG:

Mr. FLAGG. Senator Sherman was asking in reference to 3 cents per mile as a practicable charge. I wish to make a statement in that connection as bearing upon this question. It does not answer the question directly, but it was suggested to me and I wish to lay it before the committee.

There is a little road in our State, finished in 1872, and called the Paris and Decatur road, crossing the Illinois Central at Arcola. The engineer of that road, who is also its superintendent, told me that he persuaded the management of the road, at its starting, to put their passenger rates at 3 cents a mile, from the very beginning, on a road only partially finished, or when it was finished about thirty miles, I think, and at the same time the Illinois Central road, which crosses at that point, was charging nearly 4 cents a mile. He told me that the result was that they filled up their cars while the Illinois Central, as I personally know, was running trains half empty through the same country at the same time; that is, I suppose, in that particular case, and I believe it would be generally the case, except in quite sparsely-settled portions of the country, that the putting down of the rate increases the receipts. I suppose you have had that information urged upon you before, but I do not think our railroad men, as a rule, have had the nerve to try it. Our railroad superintendents are old and but short-tenured; they are living from hand to mouth, as it were; that is, the good management of the one year counts on their election of the next, and they are afraid, I think, to make the experiment.

•By the CHAIRMAN:

Q. That has been the effect in the thickly-populated countries of Europe?

A. Yes, sir; there is hardly any limit to it there, where they have a very dense population.

Q. Is not one of the chief complaints against the railroads their discrimination in respect to local points?

A. I think that causes the irritation more than anything else; that is the feeling of relative injustice. The fact that I am charged more than you are would very often make me more angry than if I was overcharged simply.

Q. We had a statement from some railroad man in Chicago that there were only four roads in Illinois which were paying any dividends at all, and a fifth that paid spasmodically, and the rest paying no dividends whatever; what do you say about that?

A. I have seen the statement; it was published in the New York Herald and in the Chicago Tribune. I think I have it at home. What I will have to say about that would be simply this, that that is not really the question. The question is, whether they have paid dividends without having used due economy in their management. I can give you other facts. The Peoria and Jacksonville road of our State, not ninety miles long, pays its president, whose residence is put down at Saybrook, Conn., \$10,000 a year for his services. The question arises, in the minds of the uninitiated, what does he do for his money? We find one road in Chicago—I think it is the Northwestern, a well-managed road, so far as I know—paying its general superintendent \$15,000 per annum, whilst the superintendent of the Chicago, Burlington and Quincy road, whom, so far as I know, is a very good railroad manager, receives \$10,000. That is, we think we detect traces, in the first place, of exorbitant salaries paid to certain officials. The question naturally arises, whether that is not true in the whole management of the road, and whether they are worked expensively; we think we know that.

By Mr. NORWOOD:

Q. Are not those exceptional cases?

A. No, sir; I think myself the exceptional cases are the other way; that there are a few roads that are what you might call well managed, so far as our western roads go. I do not think they have been run long enough to get experts in all of them. They are generally taken up by men who have turned their hands from something else to this. They have not had sufficient experience, I think, even if they had the ability, as some of them have not in my opinion.

By the CHAIRMAN:

Q. You think that the people are looking more to the regulation of railroads and cheaper water lines for relief?

A. That is the feeling in Illinois. I do not know that it is in the Northwest generally, but that there is a strong tendency to follow that. The question is how to regulate. I considered that subject pretty extensively in an address that is in the report of the convention which I have laid before your committee. I am driven to the conclusion, personally, that we shall have to have Government lines of railway in order to get competition. The point is made by Mr. Hill, in the report of the Social Science meeting of Great Britain, for 1873, that, in order to insure competition, we have got to have government railroads to compete with the private roads. All other means have failed in England.

By Mr. NORWOOD :

Q. He bases that upon the experience of the Germans in Belgium.

A. He bases it upon the experience in England, in the first place, and in the next, on the Belgium experience, where 42 per cent. of the roads are in government hands. They have there held the private roads down to whatever rates the government saw fit to run at, or near to that, and paid 6 per cent. interest on the government investment.

By Mr. DAVIS :

Q. Did I understand it to be your opinion that the Government ought to build railroads leading from the East to the West, or elsewhere?

A. I am driven to the conclusion that they will have to, and that the water routes will not be permanent enough, or quick enough to afford all the relief sought for. I think we want water routes. I think that it is the feeling of our people that we want water routes, but rather as a means of temporary relief than as a means of permanent relief.

Q. Have you considered any particular route of where to start or where to land?

A. In regard to railroads?

Q. Yes, sir.

A. I have, generally.

Q. What was it?

A. I have developed that in the address I speak of. My point would be to connect the principal places of business in the West—the centers of business, in the first place, with the best seaports on the Atlantic by East and West roads, making about four roads; one you may say would go from Omaha to Boston and New York, touching, as far as practicable, the principal points between Chicago, and, perhaps, Toledo, Cleveland and Buffalo. Drawing another one from these points, or rather from Lawrence to Baltimore, probably; another through Memphis, endeavoring to hit Norfolk, or thereabouts, and another one still from Vicksburgh to a point West, striking at Port Royal Harbor or Charleston. Then I would turn the thing about and would draw a line parallel with the coast from Portland through New York, Baltimore, Washington, &c., striking at Pensacola, which, I think, is the best harbor on the gulf. I would have another from Cleveland, the lowest point on the lake, running through Cincinnati and striking at New Orleans; and another still from Chicago to the lowest point on the lake there, striking through these points, going down through Little Rock and striking at Galveston. Ultimately it might require one from the end of Lake Superior, parallel with that again, striking down at Brownsville. I have looked to something like that, having those roads owned by the States through which they pass, having the stock furnished by those States, and letting that stock draw the interest, Government guaranteeing the interest. That would embrace twenty-five States, passing through that number. Those seven roads comprise eight thousand miles of road in a straight line.

Q. Are they to be double-track roads?

A. I had not got that far, but the point, I suppose, is freight-roads.

Q. Freight-roads exclusively?

A. That is what we need; I do not know that we are particularly oppressed by passenger traffic.

Q. Have you estimated the cost of those roads, or given any thought in that direction?

A. Yes, sir.

Q. Be kind enough to give us the result of your investigations.

A. I will give you the result of my investigations, or rather the facts I found out, first. I have a letter from the chief engineer of a road which was built in Indiana through Ohio in 1851. He states to me that the actual figures in that case, counting iron one hundred and two tons, I think, to the mile, being T-iron, were \$10,700 to the mile, as the cost of the road. I am driven to the conclusion that a good many of our roads have been very much overestimated.

By the CHAIRMAN:

Q. That is without rolling-stock?

A. Yes, sir.

By Mr. DAVIS:

Q. Is that for the iron, or for the road?

A. That is for the grading, the tying, and putting down the rails. It was a hundred and two tons to the mile, as I understand, and T-rail. It is a little heavier, as I understand it, than the iron ordinarily used, but I am not positive about that. I am not a railroad-man.

Q. Was that hundred and two tons for a single-track road?

A. A single-track road.

Q. What was that estimated at per ton upon the ground?

A. Do you mean the value of the iron?

Q. Yes, sir.

A. That was \$48.

Q. Have you ever known any iron to be bought at \$48?

A. I understood the same gentleman that iron which came the nearest corresponding to it, except that I think it was a steel or a partially steel rail, was at that time quoted in New York at \$98—more than double that amount.

Q. That would double your price of the road, then, would it not?

A. No, sir; it would double the price of the iron, but not of the ties. The ties could be got at about the same price now, and I do not know that the grading would cost more than now; but so far as the iron is concerned, it would a little more than double the cost at present.

Q. Have you ever known a road to be built at the figures you have given us?

A. This one, I say, was built in Indiana in 1851. I think a portion of it was in Ohio.

Q. You do not recollect the size of the iron used in that road, do you?

A. Only the weight, which was one hundred and two tons to the mile. My conclusion from that is, that we could build a road now a good deal cheaper than what is popularly supposed, if the thing was brought down to business. That would make a hundred and sixty millions of dollars simply for the construction of a single-track road, and three hundred and twenty millions if you made a double-track.

Q. You estimate, then, that such a road as you have described, in different directions, could be built at \$20,000 a mile, single track?

A. Yes, sir. In fact, if I were the Government I should not build all of it; I should condemn a portion of it. I should try the practice of condemning a portion of it.

Q. Do you mean the lands?

A. No, sir; taking existing roads—endeavoring to purchase them, if I could, or condemning them if I was obliged to.

Q. Would you pay for them if you condemned them?

A. That I understand to be included in the idea of condemning.

Q. Have you considered how the roads were to be managed; how would you manage them?

A. I have not considered this to the point of going into operation. I simply bring up this fact, that the management of the Erie Canal, for instance, which, as I understand, has not been immaculate by any means, has yet been decidedly better than the Erie Road, and has been attended with less corruption, both public and private. I think the same is true of our Michigan Canal, in the State of Illinois. While it has not been managed in the best way, it has been managed for the public interest more than any railroad in the State. I am willing to compare the management of the post-office system, with all its fluctuations and appointments for political reasons—I am willing to put that against the management of our express and telegraph companies. I say, I think if the Government were put in charge of a matter of this kind, and had a long time to run it, that it would eventually get it into shape so that it would be reasonably well managed for the public interest.

Q. Then I understand you have not thought of the details of the management. You just compare it with other things managed like railroads?

A. O, no, sir; I have not been expecting to take a contract to run it, and have simply considered it an escape from the existing abuses, which I know are very great.

Q. Have you estimated what it would cost to transport freight per ton per mile? I mean the estimate of the actual maximum cost.

A. No, sir; I have never estimated that. I have no information or experience that would enable me to do it; I have simply taken the facts that I have got from other sources—from those whom I supposed understood what they were talking about.

The statement was made in the Chicago Tribune, and, I believe, substantiated, that a leading railway official of Chicago said that he could transport grain from Chicago to New York at 8 cents a bushel. That was last spring. He said that it was possible to do it at that rate. I suppose that meant exclusively a freight-railroad. I saw no facts connected with it, except that it was given as the opinion of a railway official.

Q. Do you agree with that yourself?

A. I should not consider my opinion in that regard as worth anything, but I think it could be done. The reason I think so is, that the facts given to us show that coal has been transported at one-third of a cent per ton per mile.

Q. In this country?

A. No, sir; in England. That is about one-quarter of what they are charging from here to the sea-board. That is, instead of its being carried for 39 cents, as it now is from Saint Louis, or 33 cents from East Saint Louis, it ought to be carried for eight and a fraction from East Saint Louis on these terms. Seems to me that it could be done with freight-roads.

Q. Have you considered from whence the authority would come to build the roads of which you speak?

A. Yes, sir. There, again, however, I would not think my opinion worth much. I speak only as a layman. I suppose, however, that the authority which was used to build and extend the Cumberland Road might be stretched far enough to build railroads.

By Mr. CONKLING:

Q. I wish to see if I understand you. Have you, yourself, estimated or tried to estimate the cost of these roads of which you are speaking?

A. No, sir; I have not got that to nearly a practical point.

I will state in that connection, if you will allow me, that we expect on behalf of our cheap transportation company, which was organized in New York in May last, of which Mr. Quincy, of Boston, was elected president, to be in Washington probably in January, and that that portion of us who believe in the feasibility of rail-routes, as against anything else, expect to get our ideas together and form a bill. By that time I hope we shall have more practical information in reference to it.

Q. This general statement, then, which you make, of \$20,000 a mile, is confined to the iron in the construction of the road?

A. Yes, sir; I am simply speaking of the road. I am not speaking of the station-houses, freight-houses, water-tanks, rolling-stock, and a great many other things.

Q. Nor of right of way?

A. Nor of right of way.

Q. Nor facilities for handling freight, such as elevators, and all that sort of thing, where they would be necessary?

A. No, sir. I included those, however, when I spoke of necessary freight-houses, &c.

Q. You simply speak of the naked road, and the iron to make a single-track road?

A. Yes, sir.

Q. Have you considered by what processes it was to be built: whether by letting it out upon contract, or of its being superintended by agents of the Government?

A. No, sir. There was a little hint on that in to-day's Republican, I think. I think it was a statement made by an engineer down here, improving the Tennessee or Cumberland River, that he had been working men by the day much more successfully and profitably than he had been by letting to contractors. That suggests that perhaps our contracting-system is not always the best. But the point, as I look at it—and I am giving my personal views now, having given before the opinion of the farmers of the West—is this: Taking our southern water-routes, they are coming, I think, to be more or less subject to a drought, which will make it impracticable to use them at certain seasons of the year. The railroads will beat them in the dry season. During the winter season the northern route is to be closed from five to six months; so that, I think, taking the year round, the railroad will beat anything that there is going. I think they are actually crowding the water-business of the country, and I think that with freight-routes they will more than do so.

By Mr. DAVIS:

Q. Have you estimated the difference in the cost of transportation by water and rail; have you given that some thought?

A. Yes, sir.

Q. What is your conclusion?

A. My conclusion is that it might be done by water a good deal the cheapest. For instance, there was a statement in the Democrat here, this past summer, of a run of coal from Pittsburgh through to New Orleans, if I remember rightly, which is figured at but one-tenth of a mill per ton per mile. I do not know of any railroad-transportation that comes nearly that low, yet there is the fact that the rates from here to Memphis are about the same by water and by rail. That is the practical fact.

By Mr. NORWOOD:

Q. Was that water-transportation at the rate of one-tenth of a mill per ton per mile?

A. Yes, sir; I say I have never known of any rail-transportation that came near that.

By Mr. DAVIS:

Q. Now as to the cost of the road of which you have heretofore spoken, I understand you to say that eighty millions was your estimate for eight thousand miles?

A. No, sir; I think I said a hundred and sixty millions, or just double that.

Q. That is for a single track alone, without equipments in any way, without locomotives, cars, out-buildings, or anything of that kind?

A. Yes, sir. I approached that, by the way, from the other point; that is, I considered how much we were losing here. Taking the two cities of Chicago and Saint Louis, as I figured it in 1872, those two cities, of themselves, shipped the equivalent of one hundred millions of bushels of grain. I reduced the flour to grain in making that calculation. My estimate was that there were at least two hundred millions of bushels of grain went out here from the Northwest for 1872, taking the cities of Milwaukee, Toledo, and so on, which had also shipped great quantities by rail. My own estimate is, that on most of that transportation, and I do not know but I would say on all of it, there has been a loss, if I may call it so, or an overcharge, compared with what it might have been done for, of somewhere in the region of 20 cents a bushel. Now that means a good many millions of dollars, which is lost in this country to the producers of the Northwest. I suppose that in a year of great production we are the losers, and about the only losers. When the production is moderate, it is divided between the producer and the consumer. When the production is very low, the consumer must pay the transportation. I think that is nearly the case.

Q. If your roads were double-track it would cost double as much as you estimate, and, instead of a hundred and sixty millions of dollars, the cost would be three hundred and twenty millions?

A. Yes, sir.

Q. And the equipment would yet have to come. However, the fact I wish to arrive at is this: Do you think a single-track road belonging to the Government, and managed by the Government, could successfully compete against a double-track road in the hands of individuals?

A. That is my impression. As was stated by Mr. Adams, before the Massachusetts legislative committee on railroads, the individual will not be satisfied with less than 10 per cent. interest; the Government will be content with 5 or 6 per cent. There, at once, is quite a difference. I should hold, myself, that our investors in railroads ought to be content with 5 per cent. It is a large investment of great sums, and 5 or 6 per cent. interest might be almost or very safely guaranteed.

Q. Your idea was that the Government could issue bonds for the building of the road at 5 or 6 per cent.?

A. Yes, sir. My own figuring, in the first place, on that was this: I went a good deal higher than we are speaking of; I went up to four hundred millions. I figured it that we could very well pay the interest here in our State of Illinois, and I think most of these Northwestern States, on our portion of the road, simply out of what we would save upon our grain alone.

Q. You would prefer those railroads to water-routes?

A. Yes, sir; in consideration of the facts I speak of, that I think the railroads will take the business. They are a quicker route, and you can turn your money faster and get your returns quicker. I would not wish to be understood as saying anything against the water-routes; we need those, and need those at once.

Adjourned to 10 a. m. to-morrow.

SAINT LOUIS, MO., *October 31, 1873.*

Committee met at 10 a. m., pursuant to adjournment.

Examination of B. R. BONNER.

By Mr. NORWOOD:

Question. Have you had any connection with the transportation on the river?

Answer. Not personally; no, sir. I have not been engaged in the business.

Q. Have you a knowledge of that business on the river?

A. Somewhat.

Q. You are a merchant, I believe?

A. Yes, sir; I have been for a number of years.

Q. Will you state to the committee any information you may have in reference to the management of those lines and the cause for the high charges on the river at certain times? Any information upon that general subject, which you may be able to give us, I should be glad to have.

A. Well, sir, I don't claim to be officially informed on the subject. I think there are several reasons, however, for high rates of transportation on the Mississippi River and its tributaries. I think the chief reason is the obstruction to the navigation of the river—the upper-river obstructions at Rock Island and at Keokuk. I understand, however, that the obstructions at Rock Island are very nearly overcome; but the obstructions at Rock Island certainly add very largely to the cost of transportation from the Upper Mississippi River to Saint Louis.

By Mr. SHERMAN:

Q. The obstructions at Keokuk?

A. Yes, sir; they add very largely!

By Mr. DAVIS:

Q. Where do you divide the river when you say "upper" and "lower?"

A. From Saint Louis northward and from Saint Louis southward we usually call it the "Upper Mississippi" and "Lower Mississippi." Those are common expressions here.

Q. I understood that, but I didn't know whether it was Cairo or where it was.

A. Well, sir, it divides here, in the common understanding. Then between Saint Louis and Cairo there are a great many obstructions. There are a great many sunken boats and a great many snags in the river, and at seasons of the year there is a great want of water on account of a few sand-bars. I understand there are only a few. Those, we suppose here, might be removed at a very small expense on the part of the Government, by the construction of wing-dams, or such other means as would cause the water to remain in the same channel, thus washing out the sands. We have thought, for a number of years, that if that was

done here it would give us a sufficient depth of water from here to Cairo. There is no want of water from Cairo to New Orleans, as I understand it, but the obstruction at the mouth of the river is perhaps the greatest difficulty in the way of our exportations of the cereals of the Mississippi Valley.

There is want of ocean-tonnage at New Orleans, and the cause of that is probably the difficulty of getting over the bars regularly and meeting the cereals that would go down the river to New Orleans. Vessels frequently lie outside of the bars there for weeks at a time, as I am informed, so that shippers of the cereals from the Northwest cannot rely with any certainty upon getting ocean-transportation. That, perhaps, is the great difficulty in the way of moving the surplus cereals of this valley to the foreign markets of the world. I think if steamers could leave New Orleans with the same regularity that they do the port of New York, there would be an abundance of grain there at all seasons of the year to give them tonnage.

By the CHAIRMAN:

Q. Do you understand competition to be free on the river, or do these boats run in combination?

A. I do not think it is as free as it used to be under the old system. I think that the transportation of the Mississippi River is rather in a transition state at present. Formerly it was carried on in boats adapted to freight and passenger transportation both. It was a combination of both. The boats were owned by a great many persons, which afforded very sharp competition, and for that reason the rates were perhaps very low; but that system of transportation has become too expensive in competition with railroads and the other modes of transportation now in vogue, so that those boats have been pretty much entirely abandoned, and the carrying is now being done chiefly by barges. That is of late date, however, and there are but one or two barge companies doing business on the river, so that the transportation of the river may be considered somewhat in the hands of a very few persons, and may assume to some extent the phase of a monopoly. I think that with the obstructions removed from the river—at the mouth of the river, especially—so that there would be a certainty of getting ocean-transportation, that capital would very speedily place other barge-lines on the river; but, with the present uncertainty of foreign tonnage, there is very little inducement for capitalists to put even other barge-lines on the river. It frequently occurs that commission-merchants and shippers at New Orleans have to telegraph to Saint Louis not to send down any more grain, for the reason that there is not ocean-tonnage there to take it away. Now, if the mouth could be so cleared that ocean-tonnage could come in there with regularity, then there would be barge-lines in competition that would take the cereals of the Northwest and of this whole valley down there; but with that difficulty in the way there is little or no inducement for capitalists to invest in even barge-lines.

By Mr. SHERMAN:

Q. What is the necessity of having any combination with lines of barges and tugs?

A. I don't think there is any necessity for combinations at all.

Q. What is the effect of those combinations when made?

A. The effect of combinations always is to advance prices, whether on water or land.

Q. Is there anything in the commerce of the Mississippi that would

prevent the habit in other ports of each vessel having a separate ownership—each tug having a separate ownership and tugging other vessels belonging to individuals, the tugs being owned by one person, the barges by others, or the whole raft being owned by one person?

A. No, sir.

Q. Is there anything in the commerce of the Mississippi that would make it necessary to form a line to leave at particular days and particular times?

A. Well, I think not, sir. Perhaps the scarcity of outward-bound freight makes it necessary to some extent for boats taking out tows of barges to leave on certain days in order to secure loads, but if there was an abundance of outward tonnage, I think there would be ample business to afford competition for a large number of persons to engage in the transportation on the river.

Q. Are you familiar with the transportation from Chicago to Buffalo?

A. No, sir; not specially so. I understand that it varies there very considerably, ranging from 6 to 15 cents. I am not very familiar, however, with transportation from Chicago to Buffalo.

By Mr. CONKLING:

Q. I would like to know what is the precise difficulty in respect of the lack of ocean-tonnage at New Orleans. I do not now mean the difficulty growing out of obstructions in the river, but the local difficulty there.

A. I suppose that there is a great want of capital there to invest in ocean-tonnage. You are aware of the disturbed condition of matters at New Orleans, and the depressed condition of trade there ever since the close of the war. The capital of New Orleans operators is no doubt very greatly reduced, and I do not think they have the means to put on ocean lines.

Q. What is the difficulty about these lines being established by capital coming from elsewhere?

A. There is no reason why it should not be done, except the difficulty of getting an abundance of freight from the upper river.

Q. What causes that difficulty?

A. The cause of that difficulty is the want of ocean-transportation.

Q. Let me see if I understand you. You say that the difficulty in establishing lines of ocean-steamers is the lack of freight?

A. Yes, sir.

Q. And that the lack of freight arises from the want of ocean-steamers?

A. Yes, sir. Perhaps the principal difficulty in the way is the obstruction at the mouth of the river. Steamers cannot come in with perfect regularity so that shippers of grain can always rely upon transportation from New Orleans.

Q. In other words, if I understand you, people on the Upper and Lower Mississippi cannot rely upon making connection with ocean-going vessels?

A. They cannot.

Q. Suppose warehouses of adequate capacity were erected at New Orleans, wouldn't they obviate all the difficulty?

A. Not entirely.

Q. Why not?

A. It is not best for grain to remain very long at New Orleans without shipment.

Q. For what reason?

A. On account of the warm weather—the climate.

Q. That climate is against it?

A. Yes; that is one objection. And then persons engaged in the exportation of breadstuffs, cereals, do not care to have their stuff stop at New Orleans for an indefinite time. If it lies there for one week for want of transportation it may lie there a month. Persons shipping abroad generally want to draw against their shipments, and they want to have some degree of certainty that their shipments will go forward.

Q. Draw on whom against their shipments?

A. They may draw on Liverpool. If they ship direct to Liverpool, they make shipment and make drafts against the Liverpool house.

Q. Cannot that be done by a warehousing system?

A. It might be done, yet they would have to make much longer time bills if the grain had to remain in warehouse at New Orleans for thirty, sixty, or ninety days. It is very expensive. They cannot negotiate their bills with the same facility.

Q. They could negotiate their bills better than they could if it remains those thirty, sixty, or ninety days in warehouse at Dubuque or Burlington, couldn't they?

A. In a warehouse at Burlington they could not negotiate bills at all. They would not draw.

Q. Therefore, the nearer you get to sea and the nearer to Liverpool the more easily you can negotiate?

A. Certainly; I regard that as a very serious obstacle in the way; and another is, that it is not best for grain to remain, as I say, very long at New Orleans.

Q. How long can corn remain in bulk, stored in New Orleans with safety?

A. That is owing a good deal to the condition of the corn. If it is very dry it remains longer, and if it is not so well cured it will not stand it so long.

Q. Suppose it is in the best condition, how long would it remain?

A. I am not prepared to give you an intelligent answer on that question, not being a shipper myself.

Q. But you think it is hazardous to keep it there?

A. Yes, sir; there is no doubt about that. If they can get transportation within a few days at New Orleans, grain goes through by that route to Liverpool with as much safety as though it passed from Montreal. There is no doubt about that, because the experience of our Saint Louis merchants who ship is to that effect.

Q. And it is upon their experience that you rely in making that statement?

A. Yes, sir.

Q. You say that the want of the establishment of ocean-lines grows out of the want of water-freight on the river, and that grows out of the lack of ocean facilities. As between those two effects which do you consider the cause and which do you consider the effect? There must be some relation of that sort between them. Now does the destitution of freight down the river cause the lack of ocean-going facilities, or does the lack of ocean-going facilities cause the famine of freight on the river?

A. Well, sir, I think it is an aggregate of these facts, all growing, or chiefly, out of the difficulties of getting in and out of the river.

Q. Won't you speak of these difficulties precisely? I don't quite understand them.

A. The chief difficulty is the bars at the mouth of the river, which

hinder and delay steamers outside. I understand that very frequently steamers lie outside, and in all cases they have to be towed in. The expense of towage there is very great. The expense of getting in and getting out is very great. I understand there is somewhat of a monopoly in the way of towing at the mouth of the river. When a vessel comes it has to lie outside of the bar until persons in charge of the tow-boats are ready to go and bring it in. I understand that frequently almost fleets lie outside there waiting their turn.

Q. Speaking now of the difficulty of getting in for want of water—during what months is that?

A. I think that the spring season, perhaps, affords the greatest difficulty. I don't speak with accuracy on that point. But the fact that there are obstructions there at all is a great hinderance to capitalists putting on regular lines of steamers.

Q. Do you know any month in the year when a sea-going vessel cannot be towed in? I do not mean an exceptional case, but year by year.

A. I don't know that I do, sir.

Q. And the cost of towage there?

A. But there is great delay.

Q. And that arises, as you say, from a monopoly of towing and a want of tug facilities?

A. Well, partially so.

Q. Is there any way by which you can construct an artificial channel, that you know of, which will not still necessitate the employment of tugs to convoy sea-going vessels to and fro?

A. We have thought that if the Fort Saint Philip Canal was constructed that would obviate the difficulty.

Q. That vessels could go by their own motive-power?

A. Yes, sir; we have thought so. Of course that is a subject which you will investigate at New Orleans. We think that would probably afford the best outlet. I wish to correct myself in relation to the steamers being towed over the bars. Small steamers are able to come over themselves, and it is the sailing-vessels chiefly that have to be towed over, and steamers of the largest tonnage.

By Mr. SHERMAN:

Q. They have to have local pilots, do they not?

A. Yes, sir.

By Mr. CONKLING:

Q. I understood you to say, sir, that regular sea-going vessels are not small vessels?

A. Yes, sir.

Q. And the small vessels that come in require nothing but pilots, and the larger vessels require convoys?

A. Yes, sir.

Q. Do you speak now of the sailing-vessels and large steamers also when you say that they can move themselves through the proposed canal?

A. Well, sir, I don't know whether they will have to be towed up or not.

Q. I take it the sailing-vessels would have to be towed up?

A. Yes, sir; but the others, I presume, would not.

By Mr. NORWOOD:

Q. I understand you to say that the reason why there is not more

freight going down the Mississippi is because there are obstructions at the mouth of the river ?

A. Yes, sir.

Q. And that that is the cause of there not being more facilities for transportation, and consequently more freight to be transported ?

A. Yes, sir.

Q. Does not that cause operate just as it would upon any water-communication where there were obstructions in the way ?

A. I know of no other water-communication where the same obstructions exist.

Q. I don't mean that. Would not a like cause produce a like effect upon any water-communication ?

A. I should think it would, sir.

Q. To illustrate, suppose that upon the Erie Canal there was a want of lockage by which only a fourth of the vessels could pass compared with those that can pass now, or even one-tenth, don't you think that the lack of freight would occur in that case just as it does on the Mississippi River or upon any other water-communication ?

A. To some extent.

Q. In other words, anything that is an obstruction to commerce will obstruct transportation.

A. I should think so, sir.

Q. And you mean simply, then, to say that because the mouth of the Mississippi prevents sea-going vessels from coming in and getting out of the port of New Orleans, that there is a consequent deficiency of river-transportation and freight going down the river ?

A. Yes, sir ; I mean to say that.

Q. And that is all you mean ?

A. That is the point to it ; yes, sir.

By Mr. DAVIS :

Q. Be kind enough to state what the charges are to New Orleans for transshipping grain. I mean the expense at New Orleans of transshipping grain from the river to sea going vessels.

A. I don't know, sir, of my own knowledge.

Q. Now, as to the barges, I understood you to say that they were new ; that you were adopting the barge system now for the boat which you formerly had ?

A. Yes, sir ; that is for freight purposes.

Q. What is the tonnage of those barges ?

A. That I don't know either.

Q. Are they exclusively for grain or do they carry all kinds of freight ?

A. They can carry all kinds. It is chiefly for grain, that being the chief article of transportation.

Q. Are they covered ?

A. Yes, sir ; I believe they are. They bring miscellaneous freight back up the river, railroad-iron, &c.

Q. They are towed by steamers ?

A. Yes, sir.

Q. How many in a convoy or tow ?

A. I think about six. (To Mr. Stanard.) Am I correct about that ?

Mr. STANARD. It is owing to the stage of the water from three to six.

Q. Perhaps some gentleman can tell us what their tonnage is ?

Mr. BONNER. From four to fifteen hundred tons, or they run, perhaps, from six hundred to fifteen hundred tons.

Q. What is the average size ?

A. The average is about a thousand tons ; that is, of the majority in use.

Hon. HENRY T. BLOW.

By the CHAIRMAN:

Question. There is one point in this investigation to which we would like to call your attention particularly. It has occurred to some members of the committee that the water-transportation is, as a general rule, higher on the Mississippi than on other water-lines, and we would like your views as to the reasons for it if it be true.

Answer. There are a variety of reasons, as it strikes me. First, the conditions which I suppose you understand, but I had, perhaps, better allude to them. The grain-growing belt of the country is north of the Ohio River—the country that produces the corn and the wheat. Therefore there is an immense competition between the eastern and southern lines—the lines to the markets of the world by the way of New Orleans and the lines to the same markets running across the country. Therefore in this competition the last few years all the capital of the country has gone into the railroad-system and the water-system of the lakes, the water-routes by the way of Canada and by the way of the lakes, the Erie Canal, and the lines across to the sea-board. The capital, and you may say almost the enterprise of the country for the last few years have gone in that direction. Then we are prevented from competing at a particular season of the year by natural causes with those very lines of communication. The low water in the Mississippi River commences about July or August, and it continues until obstructions from cold weather commence—ice—say until November, and then you may say there is almost a suspension of navigation.

By Mr. NORWOOD:

Q. Below what points does this ice obstruction occur?

A. The ice obstruction cuts off all north of us between this point, and renders navigation from Saint Louis very irregular, if not sometimes entirely obstructed. Of course you are aware that we assume that in the seasons in which the river is not obstructed by those natural causes, and in which we would have to compete with those cross-lines, as well as other seasons of the year, that even with that we have a river that has been entirely neglected and that is filled up with obstructions natural to rivers. For instance, our river has been entirely neglected by the General Government for many years. Some gentleman mentioned here yesterday about there being a large number of rocks between here and the mouth of the Ohio—five thousand. Of course that is a very grave error, but there are a large number of obstructions between the city of Saint Louis and the mouth of the Ohio River. Between Saint Louis and the source of the Mississippi there are also obstructions, which, of course, you are all familiar with, because your attention has been particularly drawn to them, the upper and lower rapids especially. But what I have mentioned is the main thing in this matter. Then Mr. Bonner, while I agree with him in the main, has not explained to you exactly why it is we have not communication with Liverpool. At the season of the year when we can take grain from the city of Saint Louis to the city of Liverpool, capital and enterprise up to this time have never got a combination by which a line of steamers from Liverpool would meet the barge lines from Saint Louis, and there could be through bills of lading regularly. For instance, you cannot buy grain in the city of Saint Louis and make a rate of freight here to Liverpool regularly. One of the greatest features essential to cheap transportation is that. Then I will mention another reason, the want of capital and the want of enterprise, (and you may settle that as you

choose among you;) that whether the combination has either been a want of capital or a want of enterprise, or a combination of the two causes, up to this time the system prevailing on the river until the barge lines innovated upon it, has been an old decaying system of navigation. The men who have had this great enterprise in their charge have utterly neglected to come up to the intelligence of the age, in the requirements of the Mississippi River. Their steamers are not adapted to the river at all, except one or two. The consequence is, that was tried to be improved by a barge-line system, which has failed for want of connection with Liverpool. You can take freight for 13 to 14 cents a hundred pounds, or 15 cents a hundred is the outside for the barge-line from here to New Orleans; but when a barge meets there it has not got the friendly assistance of a similar mode of transportation; that is, a cheap facility to Liverpool. I entirely disagree with Mr. Bonner about another thing.

Q. Will you explain what that barge does meet?

A. It meets nothing; neither a market, capital, nor a system of ocean navigation. Mr. Bonner has stated to you that that was attributable to difficulties in the navigation. That, you are all familiar with. You all understand that we have no sure outlet to the Gulf of Mexico.

Q. What is your opinion on that point?

A. My opinion is that the Government ought to have had it many years ago.

Q. I mean as to the effect of those obstructions there.

A. The effect of those obstructions is to place the whole carrying trade of the country at the mercy of the cross-lines.

Q. What would be the effect of the removal of those obstructions so as to give you free open ocean navigation?

A. I believe, sir, that the effect would be to induce a combination of capital and enterprise in the valley of the Mississippi as we have never had; a perfected line of steamers and barges and a new system of carrying steamers adapted to the trade, economically propelled, beasts of burden carrying great loads of freight, and a system of transfer in New Orleans by which the ocean vessels coming in, with this idea that I have suggested of capital and enterprise meeting there, and a continuous system to Liverpool, ending only in the foreign markets of the world. I wish to correct an expression of Mr. Bonner's in that connection. You all know that Marseilles is one of the greatest grain markets in the world, in a tropical climate with great changes and humidity and a great ocean or sea—the Mediterranean—south of it. I think it is saying too much against New Orleans to say that the humidity of the atmosphere there is so much against grain as Mr. Bonner seems to think. On the contrary, well-preserved grain will not suffer in New Orleans by being exposed for any length of time by which this navigation subjects it to this exposure.

By the CHAIRMAN:

Q. Do you know anything of the combination or otherwise of the steam-lines of this river?

A. Steamboating on the Mississippi is a very small thing. It is a decoying interest not amounting to anything. They don't compete with anybody. They combine among themselves, I think. I am just giving that as an independent opinion. I am not as well informed on this subject as these gentlemen who ship, but it has appeared to me that they are singularly defective in everything necessary to the conduct of a great enterprise.

By Mr. SHERMAN :

Q. Do you know whether those transportation lines are incorporated companies under the laws of the State?

A. Yes, sir; I think that one of the best lines is an incorporated company. That is an excellent line. It is Mr. Scudder's line of steamers to Memphis.

Q. I speak of the barge lines.

A. I am of the impression that it is.

Mr. BANI. It is.

Mr. BLOW. I think I have noticed that they are nearly all incorporated companies. In fact, I know they are, because under the old-fashion system of transportation these great, big, over-grown steamers floating around here are useless for any purpose, and they ought to be burned up, every one of them. There are a hundred of them that are of no use to anybody; they have lately got to incorporating the whole of them, because no man would dare put money in them in any other way. It would take his private fortune. One line owes the stockholders \$17,000, and is \$45,000 in debt for expenses. It is an over-grown tub. It is no navigation. Three-fourths of the navigation of the Mississippi River belongs to a different age.

Q. How about the northern line?

A. It is the same way, decoying.

Q. Is that an incorporated company?

A. Yes, sir. The Keokuk line and the Northern line, I believe, are both incorporated companies, recently consolidated because of a competition which prostrated them both.

Q. Are those incorporated under the laws of the State of Missouri?

A. Yes, sir.

Q. By general act?

A. Yes, sir, general law of the State?

Q. No special act?

A. No, sir.

A BYSTANDER. Of Illinois. To prevent paying local taxes here, they incorporated themselves under the State of Illinois law. Barge companies owned in Illinois.

Mr. BLOW. You are asking me about the Northern line?

Q. Yes, I want to know simply if they are incorporated under the laws of the States?

A. Yes, sir, they are incorporated companies.

Q. What is the object of that incorporation, so far as you know?

A. I suppose it was for the consolidation of capital; but this last grand consolidation, as I understand it—of the Northern line packets with the Keokuk packets—was absolutely to prevent both companies from being utterly destroyed. The competition destroyed them. It is a monopoly.

Q. Was one object of this incorporation to avoid the law of common-carriers, which makes every owner of the vessels individually liable?

A. Yes, I think that is the main object.

Q. They are then protected by their acts of incorporation from individual liability?

A. Yes, sir.

Q. What is the effect of this concentration of the means of transportation into companies, as to raising freight or lowering it?

A. It is a combination against the interests of the grain-growers, of course; persons who have freight to transport.

Q. They secure higher prices for their freight?

A. Yes, sir.

Q. Is there anything in the commerce of those vessels that makes it necessary for them to combine, or couldn't they run as well with separate interests, each vessel for itself?

A. The growing obstructions in the river and the general decaying of the system; I believe it is essential to their preservation. I don't think now, with all the obstacles thrown in the way of navigation, that the present system of vessels could be run successfully. But I think it is a miserable system of vessels, utterly unfitted to the navigation of the river, in the first place. I think that comes from the want of sagacity we ought to have for the requirements of the times.

Q. Then, if I understand you, these are incorporated companies, the chief object of which is to enable them to concentrate capital; and, secondly, to avoid the law of common-carriers, which makes them individually liable?

A. Yes, sir.

Q. And that the effect of this is to increase freights?

A. Yes, sir, and to run off a class of people from the river that really have not got the capital to compete with them. I can illustrate that perhaps so that you will understand it. There has been on the exchange here for the last eighteen months a model of a vessel that will carry freight at three-fourths of what these vessels have been carrying it at and make money, but the capital is in the hands of men who will not build a vessel of this kind, because of the fact that they have so many of those old, worn-out, and miserably-modeled things which form their capital stock. They don't propose to inaugurate a competition which shall be destructive to them.

Q. These vessels are put in and so much stock in a common association is taken for the vessels?

A. Exactly.

Q. And whether the vessels run or not is a matter of indifference to the owner of the vessel, because they get a share in the general profit?

A. Yes, sir; they share *pro rata*.

By Mr. CONKLING:

Q. You say that the enterprise and capital give themselves to eastern routes from the Mississippi basin to the Atlantic?

A. I do, sir.

Q. Why is that?

A. I state that as a fact.

Q. I know you did, but I ask you the reason of it?

A. I will state it a little differently from what you make it. I stated that the capital and enterprise of the country was invested in great lines across the country, through the grain-growing belt of the country. We all know that to be a fact. The railroads have absorbed the capital and enterprise of this country. Why they do it, I suppose, is because they expect to make money and good dividends from their stock, and because situated in that belt it gives a promise of perpetual profit.

Q. The point of my question was this: If grain can be carried on a down-grade to the mouth of the Mississippi and there find equal facilities with those of any other port to European markets, why does capital and why does enterprise embark in east and west lines of railroad across the country to the Atlantic rather than in the north and south lines to the Gulf of Mexico?

A. I think that is very simple: because the east and west lines run to the great cities, from which the grain of the country has generally been

exported, and where the importations of the country come back in return.

Q. Do you think it is from a mere spirit of imitation, that because it has been, therefore capital elects to keep it so?

A. No, sir; I do not think that, but I think that the condition of the great routes south and the condition of the South itself, with its capital entirely gone, render it for the time being impossible for it to act at all as a capitalist.

Q. You speak now of the condition of things since the war?

A. I am speaking of the war and the condition since.

Q. Wasn't the same thing true previous to the war?

A. Previous to the war, my recollection is this: that we hadn't engaged in the exportation of grain to as great an extent, but that we had a much larger share of it in proportion than we have now. You see you are going back twelve or fifteen years.

By Mr. SHERMAN:

Q. That is, the river had?

A. Yes, sir. I think that in proportion our receipts in New Orleans and exportations were much larger. Isn't that so, Mr. Stanard?

Mr. STANARD. I think that is so, sir.

By Mr. CONKLING, (to Mr. Blow:)

Q. If you will allow me, I want to make a record of your reasons for the fact that the tread of enterprise and capital is from these basins east and west and not north and south. I wish you to state as you understand them the reasons for that fact.

A. I believe it has its foundation, first, in a prejudice of capitalists, or a fear, if you please, with regard to the investment of money; second, in the fact that those railroads do run through these great grain-growing States—through the grain-belt. The great article of transportation on those railroads is grain that is grown in this country. It is necessarily the grain, because it is the only thing that they can export, and they are built for that purpose.

Q. They didn't run through the grain-belt until they were built, and I am asking you how they came to be built on a line of latitude rather than on a line of longitude.

A. I think I have stated that because the latitude had the grain and the longitude had not. For instance, the minute that you get below this city, you don't run through these grain-growing States. The grain grown in Tennessee, Alabama, Mississippi, and Arkansas is for local consumption, and hardly enough for that, while the grain grown in this belt of the country is for exportation, and because it is for exportation you have this very question here between the Grangers and the railroads. Now, if you can get what you want from the statement of facts, you can arrive at it.

Q. I take it, it is true that a railroad is a profitable investment only in the ratio in which it does a large business, is it not?

A. Yes, sir, without it has a monopoly and can make very large prices on a moderate amount of freight.

Q. But the basis of all railroad success must be an abundance of business, must it not?

A. Yes, sir, I think so.

Q. In your judgment and experience doesn't capital, as unerringly as anything we know, seek the most profitable and the most safe investments?

A. I think, sir, with regard to railroads, that they form an exception, but I think I can satisfy you in regard to that especially in the history of the extreme northern line, and the line through to San Francisco that is already built.

Q. If you will pardon me, you are speaking now of the roads not created by individual enterprise. You are speaking of two governmental roads, I think. Other considerations enter there, so that, if you please, confine yourself to the field of commerce.

A. I would allude to that as especially connected with this field for this reason: The great argument in the location of this extreme northern railroad was that it did run through a grain-belt. It was to run into that country which, above all others, was to produce the grain. Therefore its appeal to the capitalists was because of that fact. Now, while I instance those two roads to show that where a general system of roads, some of them not altogether firmly based by any means—while a general system of railroads East and West has been successful, that there has been a disposition in the extreme southwestern portion of your State to gamble in railroads; and when they got to that point they put into railroads indiscriminately, and they embarked into that northern railroad a great deal more than was healthy for that country.

Q. Can you add any reason to this fact that I am inquiring about?

A. I am endeavoring to give you all the information I can.

Q. Do you know any railroad on this continent that runs north and south which is a great grain-carrying road?

A. Yes, sir. I should think that all the railroads that start—

Q. Will you name one?

A. I think that all the roads running from one hundred and fifty miles north of this, toward the city of Saint Louis, are all grain-carrying roads—carrying an immense amount of grain.

Q. Carrying it where?

A. To the city of Saint Louis; carrying it to the point where it is the natural outlet of the grain in the valley.

Q. Do you know of any north and south road which carries grain to the sea for export?

A. No, sir; I don't think I do.

Q. Will you name the time in the year beginning with low water and the time in the year of the going out of ice and the resumption of navigation—the two times, in that respect, which mark the breaking up of navigation here?

A. Yes, sir. I will connect with that an idea that I ought to have given you. The great outflow in grain occurs in the breaking up or the opening of the river—say in January or February and late in the season. That is one of the reasons why we have met with difficulty in getting freights to Liverpool. That is at a time when the greatest production of the South is also ready for the sea and destined for Liverpool. The fact that cotton, wheat, and corn all go to market at the same time has been one of the terrible things we have had to encounter in the Mississippi Valley in regard to this matter of cheap transportation of grain across the ocean.

Q. Won't you name the time when low water takes effect of which you speak?

A. I suppose about July or August. Then we frequently have in the winter a splendid rise, keeping the water from the 1st day of January until the 1st day of July, four or five months of uninterrupted navigation, when the stream is in full flow, and then probably the transporta-

tion upon it is as safe and economical as in any other stream in the United States.

Q. Now, I seek to get that time when the navigation is good. It is from January or February, you say, until July?

A. Say from the 1st of February to July, and also frequently during the whole winter, because we have peculiarities here to which I haven't drawn your attention, nor has Mr. Bonner or any other gentleman whom I have heard. We frequently have, and probably twice out of five winters, an entirely open navigation during the winter, when it is hardly obstructed at all. But it is rather an exception than a rule.

Q. In sending grain across the continent to New York no through bills to Liverpool are made from the valley of the Mississippi, are there?

A. No, sir. That becomes unnecessary, because vessels are always waiting there for that.

Q. In point of fact, you do not know of any mode of doing business by making through-bills from the Mississippi to Liverpool across the continent?

A. No, sir.

Q. Do you think that grain can lie in store at New Orleans at all seasons with impunity?

A. I think that good grain in a dry place in New Orleans will not be affected at all.

Q. At any season?

A. No, sir.

Q. What is the objection to a system of grain warehouses by which you can leave grain there?

A. The increased cost of doing business.

Q. Is that the only objection?

A. I think so.

Q. If you had complete navigation on the river all the time you would be compelled to use elevators and to transship at New Orleans, wouldn't you?

A. Yes, sir.

Q. And the increased cost would be of allowing it to lie in store from the day of its arrival until the day of its departure?

A. Yes, sir.

Q. That is all, isn't it?

A. Yes, sir; the time that is consumed and the interest of the money invested in it. It is a very serious drawback to the shipment of grain.

Q. Was the navigation of the Mississippi formerly better than it is now?

A. I think it was, sir.

Q. How many years ago?

A. I think that the reports of the condition of the river, taking the previous ten years, would show a very great difference.

Q. That is, from a diminution of water?

A. Yes, sir; and the added obstructions.

Q. How do you account for the diminution of water?

A. I suppose by the gradual filling up of the bottom of the river, and its circuitous course to New Orleans. For instance, the Mississippi runs tortuously.

Q. It is sinuous, but of course it runs, in the main, as it always did.

A. Yes, sir. The navigation of the river by a large number of steamers that we had a few years ago, and very large steamers—I think it was injured more during the war, perhaps, than at any other time—that

caused the river to be kept in a much better condition than it would be with the present system. When there was a continuous line of steamers plying up and down the river, of course the navigation could be kept better, but during the war, when there were very few steamers occupying the channel of the river, that channel had obstructions that cannot be removed now by a continued system of running. They have to have something more; greater aid than that. I believe you are familiar with the formation of the Red River raft, and you know it has taken skill and science and money of the United States, but still you have not taken that out of the river.

Q. When were those large steamers that you speak of disapprovingly built; those overgrown tubs that you call them?

A. We have never had but one kind of a steamer on the river until these barges were built.

Q. As to this hundred of which you speak floating around here; when were they built?

A. They are the lingering steamboats of the past. Of course you know how we built them here. Here were the upper works and the engines of an old steamer, and those things are perpetuated. Taking the upper works off and putting them in a new vessel, or taking the old engine out and putting it into a new steamer. For instance, the James Howard.

Q. When was she built?

A. In the last two years.

Q. Is she one of the overgrown tubs you speak of?

A. Yes, sir.

Q. You think there is a hundred of them?

A. Yes, sir; but not so fine as she.

Q. How came she to be built so ill-adapted for this navigation?

A. Not knowing the requirements of the river. She has a cabin 300 feet long.

Q. Who paid for her?

A. I suppose the owners.

Q. Is that a joint stock company?

A. I do not know whether she belongs to one of the lines or not.

A BYSTANDER. She belongs to a joint stock company.

Q. Who is the manager of that company?

A. B. R. Pegrim. He is the captain of her; he is a river man, and my partner.

Mr. CONKLING (to Mr. Blow:)

Q. That steamer was built two years ago?

A. Yes, sir. Now I wish to explain this to you. This vessel is a freight vessel. I do not think any gentlemen present will assume that there is any necessity for her carrying passengers up and down the river, or that she carries passengers very often. Very few through passengers ever travel on her. She is built exactly as they built a steamer when they had to carry from three to five hundred passengers a trip down and up. She has a cabin that is palatial, say 300 feet long. Of course she carries a great many tons of wood and expensive set of men to operate this cabin, and all the paraphernalia and all the arrangements made to carry a large number of passengers; and now nearly all passengers go by rail, and she is a freight vessel. She depends upon carrying freight for making her profit. There are a set of gentlemen who are not engaged in steamboats, who cannot see the exact advantage of having a steamboat of that kind, when all that we want is a cargo-box,

a hull, and an engine that is adapted to carrying so many bushels of grain at the lowest possible point.

Q. Are all those steamers of which you speak, these hundred, for example, passenger boats?

A. No, sir; the barge system is entirely different.

Q. No, no. Are all the hundred overgrown steamers passenger boats in build?

A. Yes, sir; I think most of them.

Q. Now, what do you mean by those joint-stock companies avoiding the liability of common carriers? I don't understand that. How do they avoid the liability?

A. I do not suppose they do in any other way than this. If you were to build a steamer, and run her yourself, you would be liable for all debts created by that steamer, and for all the damage she might inflict, and all the trouble she might cause. In the other case, if you were in one of these companies, you put \$10,000 in that company, you would loose the \$10,000 and no more.

Q. Under what law is that?

A. Under the State of Missouri and of Illinois too.

Q. And you mean they do it not to avoid the law of common carriers, but the law of co-partnership. They make themselves stockholders in place of partners, is that the idea?

A BYSTANDER. Yes, sir.

A. They avoid the law of common carriers to a certain extent, because while they are interested in the steamboat \$10,000 they do not have a liability beyond the amount of their subscription.

By Mr. NORWOOD:

Q. Let me see if I understand the substance of your statement. Has the Mississippi River ever been put in good condition for navigation by the United States Government?

A. Never, sir. I express my opinions very freely in that. I have lived upon its banks since my boyhood. I think it has been the most neglected interest that the United States ever had. It has never received attention from anybody, from the States on it or from the United States Government; that is, attention corresponding to what it was entitled to.

Q. You think it was in better condition before the war than it has been since the war?

A. Certainly, sir.

Q. You stated awhile ago, as I remember, that the commerce upon the Mississippi River was much better before the war than it has been since the war?

A. Yes, sir.

Q. Do you attribute the falling off of that commerce since the war in part to the condition of the river, as well as to the impoverished condition of the southern people?

A. Yes, sir.

Q. Now from those starting-points, suppose that freight here at Saint Louis seeking a foreign port, and the Mississippi were in good condition by dams and dikes, so as to give a proper quantity of water throughout the year, what direction would that freight go to seek that port cheapest?

A. I am clearly of the opinion that a very large portion of it, at the seasons when navigation is not obstructed in the manner that I have mentioned, would seek that channel to the markets of the world. I am satisfied that the largest portion of it would. I don't think a railroad

would compete with it, if it was properly fostered by the United States Government and protected.

Q. Do you know the relative cost of transportation between rail and water?

A. Yes, sir.

Q. State what that proportion is—the ratio.

A. I haven't figured that out.

Q. The general statement is, that it is about as one to three.

A. I think it is greater than that in high water. I think it is less in proportion in high water; because taking 60 cents for a hundred pounds to New York and 15 cents to New Orleans, that would be one-fourth. But I have no doubt one-third would be safe.

Q. Do you think, if the Mississippi River had been in proper condition for navigation the year around, as you say it would be if it were properly dammed and diked—in other words, that there would be a sufficient supply of water—that those railroad lines, which cost three times the amount to carry freight over that it does over water, would ever have been built in competition with the river from this section of the country?

A. Certainly not, sir. It has been as I have said; the enterprise and capital of the country run almost exclusively into the railroads growing out of the condition at the time.

Q. Is it or is it not your opinion that it is owing entirely to the fact that the Mississippi River has not been in good condition that those artificial channels of commerce have been constructed?

A. I will not go that far, but I will say this in regard to the Mississippi River—

Q. I mean to say those artificial channels of commerce which carry the produce that centers at Saint Louis and other points along which would naturally seek an outlet at the mouth of the river?

A. Yes, sir; those grow out of the total neglect of the Mississippi River to a certain extent. Now I will state this because it will be an interesting thing for you to investigate on your trip to New Orleans. I believe, from my knowledge of the Mississippi River, and what I heard Mississippi River men and others say about it, that if you let the Mississippi remain neglected in the next ten years as it has been in the last ten years of that river, in that time that there is no system of navigation which could be brought about which would pay anybody for its navigation. I don't think there is any system. In other words, the natural tendency of the river, without it is guarded, protected, and cleaned out, and navigated, would render it perfectly useless to the entire country.

Q. You spoke a while ago of a diminution of water on the Mississippi River. Did you, or did you not, mean that literally?

A. Yes, sir; there is a diminution of the river, and that will increase rapidly.

Q. Do you mean to say that the volume of water passing through the Mississippi River is diminishing annually?

A. Yes, sir; it diminishes gradually; but the trouble with regard to the Mississippi River is this: that the tendency now is to fill up from the city of Saint Louis to the valleys, and as the bottom fills up, the river finds new outlets, and is wasted. The area for evaporation is increased, and the consequence is that you have a constantly increasing obstruction from one point to the other, and a lesser channel in the river. Now, if you cut off all these points that I have alluded to, and

straighten the river, and navigate it, and protect it, you have deep water. I think that is common sense.

Q. Doesn't this diminution of water render the Mississippi more easily controllable, if it was properly diked and dammed? In other words, wouldn't it be less liable to overflow its banks in a freshet, and do less damage on either side, and still give a sufficient supply of water for ordinary navigation?

A. That is an engineering question, sir, that I do not care to answer. I haven't investigated it.

By Mr. CONKLING:

Q. Have you ever taken the trouble to ascertain how much money the United States appropriated to the improvement of the Mississippi River?

A. Do you mean from the first to the last?

Q. Yes, sir; or from the last to the first, or from the last to the middle?

A. I did once, when I was in Congress, see the amount between the coast of the United States and all the rivers flowing through the interior; but I don't recollect what it was.

Q. Now the coast is a pretty large place. I am talking of the Mississippi River. You remarked here that it had been more neglected than any other interest of the republic, or something of that sort. My question is simply whether you have ever taken the trouble to ascertain from first to last, or for any ten years, how much money has been appropriated to improve this river?

A. My impression is, that from the time of the war up to the present time, some thirteen or fourteen years, between this city and the city of New Orleans, the amount is absolutely so insignificant that it is not worth mentioning. Now I speak of that time because I am perfectly familiar with it.

Q. Won't you answer my question?

A. No, sir; I am——

Q. It is, whether you have ever ascertained——

A. I have stated that I did ascertain, but I do not recollect.

Q. You don't remember it?

A. No, sir; I don't remember.

Q. Can you state, within \$200,000, the amount which has been appropriated to improve the Mississippi River?

A. No, sir. I should not think that it would be hardly fair to ask a man to state within \$200,000. It is a thing that ought to have involved millions.

Q. I will take it that way. Can you state within half a million?

A. I don't think there has been half a million expended.

Q. In all?

A. No, sir; between the city of Saint Louis and the city of New Orleans, I do not think there has been half a million expended since the war. But I will tell you this, that I have not refreshed my mind in regard to that. I am answering your questions simply to be polite.

By Mr. SHERMAN:

Q. In that same line, let me ask you whether several millions have not been expended above.

A. O, yes, sir; I am more familiar with the appropriations above here.

Q. How many millions have been expended?

A. Well, sir, I should think that you would know that better than I could. It is not exactly incumbent on me to recollect everything that you gentlemen do. The amount has been very generous, I know, at both rapids, and very necessary, and I know that it has attracted attention for a great many years, and that there is a powerful constituency, and a powerful impelling motive for action. The Northwest is very powerful, and the South is very weak.

Q. Was there ever any toll levied on any improvements along the Mississippi River?

A. Not that I ever heard of.

Q. Do you know of any toll having been levied on any waters of the Mississippi?

A. No, sir.

By Mr. CONKLING:

Q. Did you ever hear of the Louisville Canal?

A. That is an exception, I believe, almost, isn't it?

By Mr. SHERMAN:

Q. Yes, sir; it is an exception.

A. That was under peculiar circumstances.

Examination of E. W. GOULD, president of the Missouri River Packet Company.

By the CHAIRMAN:

Question. Please state to the committee what has been your occupation for several years past.

Answer. I have been engaged on the rivers for about forty years.

Q. In what capacity?

A. As clerk and master of boats, and president of different lines of boats.

Q. Can you give us any information as to whether these steamboat-lines run in competition with each other, as a general rule, or in combination?

A. As a rule it is competition always; I say as a rule it would be so. There are a few instances, perhaps, when there is a combination, but not, to my knowledge, to any extent.

Q. Do you speak of the lower or upper river now?

A. I speak of all the rivers. I have been engaged on all the rivers at different periods of my life. Of late years there have been consolidated companies or joint-stock companies formed, that formerly did not exist.

Q. Taking in a considerable number of vessels in each company, I suppose?

A. Yes, sir.

Q. From your knowledge have freights increased or decreased recently on the lower river, or have they been about the same as they were fifteen or twenty years ago?

A. I have not the data by which I could determine whether they have increased or not. My impression is that the freights have not decreased at all on the Lower Mississippi.

Q. What do you say to the volume of business done on the Mississippi now compared with fifteen or twenty years ago?

A. Do you speak of the whole Mississippi or the western rivers generally?

Q. I speak of the whole Mississippi. Has the volume increased within the last fifteen years, or has it diminished?

A. I think it has diminished.

Q. How do you account for that?

A. From the exceeding competition from railroads.

Q. But you think the prices charged are about the same as they were?

A. As an average I am inclined to the belief that the prices have diminished. The stage of water, as you understand, has regulated the prices very much and always; but as a whole, I am inclined to the opinion, without having the data to refer to, which are, I believe, at your command, the prices have diminished.

By Mr. DAVIS:

Q. That is, the prices are less now than they were before the war?

A. Yes, sir.

By the CHAIRMAN:

Q. What is your opinion as to the condition of the river; is it better or worse than it was fifteen or twenty years ago?

A. Better.

Q. You think it has been improving?

A. Decidedly.

Q. In what respect?

A. By the removal of obstructions by the very small and meager appropriations which have been made for the improvement of the river. It has done very much to improve the condition of the river. There are not half the losses now that there were formerly. At least I think not. That is simply my recollection or judgment.

Q. You believe, from your practical experience as a steamboat-man, that it is entirely practicable, then, to thoroughly improve it at reasonable expense?

A. I think it is, without a doubt. The experience of a few years has shown the very great utility of even small appropriations properly applied.

Q. What would be your judgment as to the effect on commerce and transportation charges of a thorough improvement of the river?

A. It would of course be very much reduced. The river, undoubtedly, from the little experience that I have had, is susceptible of being made almost as navigable as a canal, and as free from obstructions, at a very small cost.

Q. Is the volume of water increasing or decreasing annually?

A. I do not think there are any data by which that can be arrived at. We have periods of high water, ranging for five or six years, and then we have periods of low water. I have no means of knowing, and never have seen any reliable tables or calculations by which it could be determined that the volume of water was less. It is generally conceded that we do not have so many floods as formerly, for reasons given, and those reasons are generally the settling up of the country. Whether there is anything in that I apprehend has never been fully determined.

Q. Has there been any material change in the manner of conducting transportation on the river within the last ten or fifteen years? I mean as to the vessels carrying this commerce.

A. The boats have been better adapted, and are being made that way every year—better adapted to the navigation, but that has arisen in consequence of the more improved condition of the river. What was

once consistent as a good carrier is no longer consistent from the competition and from the character of the river. Improvements having been made, to some considerable extent, vessels of a larger and better adapted character are used now, that could not formerly be used, and were not necessary to be built. The tonnage was not required.

Q. Is competition as active on the river as it was several years ago—say for the length of time I mention; fifteen to twenty years ago?

A. I think it is quite as active.

Q. Do you think that the present system of incorporated large companies is as likely to bring about the active and sharp competition as the old system of running individual boats?

A. Yes, sir, more so, from the fact that companies are better able to build boats adapted to the wants of navigation than individuals are.

Q. Are they as likely to compete with each other?

A. So far as I have been able to determine that fact, it is so. I should presume it would continue to be so from my observation on the sea, if you please, where they have always the same water. I believe the increase of tonnage there has not tended to materially reduce prices.

Q. I don't know that I made myself understood. I think that would, of course, be the effect of increased tonnage, but is it the effect of combining a large number of vessels in a single incorporated company, or do you understand it to be so?

A. You ask if I think that would have the tendency to reduce competition?

Q. Yes, sir. In order that you will understand my point, my question is this, whether the incorporated companies that now operate on the river are as likely to compete actively with each other as formerly, when individuals owned the vessels and run their own separate vessels in the trade?

A. As a natural consequence one would suppose that the smaller the number of companies competing the less competition there would be; but so far as we have gone yet we find quite as many competing parties as are necessary, and very many more than are profitable. The river interest has been languishing very much, and these combinations have been made for the purpose of protecting and enabling parties engaged, of course, to do away to a certain extent with the very sharp competition that has reduced the profits to the point below which are paying. Hence I would conclude that the result might be carried so far that the prices would be not made as low as if the competition were between individuals as a final result.

Q. Is there an ample supply of vessels now for the commerce of the river?

A. There is very much more tonnage than there is business. There has been no remuneration to the carriers on the western rivers since the war. The war stimulated the traffic, of course, but it was not legitimate and not to be taken into account.

Q. Is that from too low prices or want of a sufficient amount of business?

A. Prices too low to make it remunerative.

Q. Can the steamboat-lines compete with the barge-lines?

A. In the transportation of the heavy down-stream freight, the principal freight that you carry South, I think they cannot. The barge-line is an institution very modern, and I apprehend that the final results have not been fully demonstrated as to whether the barge-line is the better way or not. I at the same time am satisfied that it is a better way than the character of boats that have heretofore been run, so that your ques-

tion would be answered simply by saying that I think the barge-line for the transportation of the heavy freight down the stream is the successful kind of transportation.

By Mr. CONKLING :

Q. Do you remember the tonnage of the Mississippi River ?

A. I do not.

Q. Do you remember the total freight ?

A. No, sir.

Q. Will you then, if you please, in your own way, indicate what discrepancy of this proportion you make between the amount of tonnage and the employment of it? Take it in this way: how much more freight could the present tonnage carry than it does?

A. That would simply be a guess that I would arrive at.

Q. I suppose so, sir; but you can guess.

A. I suppose there is sufficient tonnage on the river now to transport at least double the freight we are offered.

By Mr. DAVIS :

Q. Can river-freight be transported as low as lake-freight per mile?

A. It can in high water, I believe.

Q. A good stage of water?

A. Yes, sir; I believe there is no question on the score of practical engineering about making a stage of water between here and New Orleans which will enable vessels to carry freight as cheaply as carried upon the lakes or upon tide-water.

Q. Do you know what the cost is, sir?

A. You have the figures, I think, before your committee, and perhaps more correctly than I could give them to you. Of course, as I said before, it would always go up at once, owing to the character of the water and other circumstances. Transportation by our steamboats depends very much also, not only upon the stage of the water, but the amount of travel there is going on on the river, which is only periodical as you may say. Portions of the year we carry a very large number of passengers, and the passenger-traffic is very valuable and profitable, and while the gentleman who preceded me would discredit the character of the present boats, I am very unwilling, as a representative of that interest, to concede that point. He makes a particular reference to the steamer James Howard as being an "overgrown tub," if you please. I should be sorry to have this committee or any other committee of representative gentlemen go from here and suppose that that fact is well established. I believe it can be shown that the James Howard is a good investment; that the owners will be largely remunerated even in the dull time in which she has been out, and that she is one of the best investments of river-craft that has ever been made. I would not even except the barge-transportation, which is now in the ascendant.

Q. You are a steamboat-man, are you?

A. I have been for forty years engaged on the rivers in all capacities and characters of boats. I have built and run boats like the James Howard; not so large, but of the same character; and I speak, I believe, understandingly as to the success of the James Howard, the boat which has been referred to as one that is overgrown.

By Mr. CONKLING :

Q. What is the use of her cabin, which is said to be of such large dimensions?

A. For the accommodation of a class of passengers who will always

travel by the river, and she carries a great many, and her passenger-traffic is very large and very profitable, as I understand from the owners. I am not an owner in her, but I know parties that are, and who built her.

By Mr. DAVIS:

Q. Have you a knowledge of the carrying-vessels on the lakes?

A. No, sir; not very much. I am not personally acquainted with lake navigation.

Q. From your knowledge, do you think the character of your vessels is as well adapted to the river as they are to the lake?

A. I think that they are being made so, sir. As I said, the interest has been very much under par for the last few years, and there have been but few fine boats built; but those built I think are as well adapted as those on the lakes, and they are profitable or they would not be continued. Of course we are at the same time giving them more freight capacity, but still continuing the passenger capacity; and as to there being a hundred, or fifty, or twenty useless hulks of immense growth, I don't think there are ten; I do not know of ten on the rivers, and I believe I know every boat that is afloat, and the character of the boat. I believe they are useful, and all the modern-built boats are profitable, except at certain periods of the year. Of course they are suffering at this time.

Q. In your opinion as a river-man, and with the improvements that you are now making in the boats, and the proper improvement of the Mississippi River, what per cent. would freightage be reduced from here to New Orleans? In other words, how much less could it be carried with the improvements of the river and boats, than you are now charging?

A. I don't think I could give you a satisfactory solution of that question. I can simply say that the parties now owning that sort of vessels, coming in competition with the others, would reap very largely in the benefits over the old ones. Of course they could carry freights cheaper and do carry them cheaper on the better or improved character of boats, and they are very largely, as I said before, benefited by their passenger-traffic which seeks the river.

Q. You will confine your answer to the boats. My question was to the improvements of the boats and a thorough improvement of the river by the Government.

A. Well, sir, that would be a matter of opinion, but I think it would be reduced one-half. I think 50 per cent. would be a fair calculation for a practical improvement, such as is practical in the estimation of good engineers.

Q. Do you mean 50 per cent. or one-half?

A. I should say one-half the present cost.

Q. Then if 15 cents per hundred is the rate now, which I believe you say is the rate, isn't it?—

A. No, sir; it is more than double that. Fifteen cents is the lowest minimum price that freight can be or has been carried profitably to New Orleans for, I think.

Q. In a good stage of water?

A. At any stage of water.

Q. Then with the improvement at the same stage of water under the same circumstances, do you think it would be done for $7\frac{1}{2}$ or 8 cents?

A. I think it might be carried for one-half that price. You confound my meaning, or I would in giving it to you unless I qualify it a little

further. I have stated 15 cents to be the lowest minimum rate of freight at high water. We do not have high water more than perhaps one-third of the season, and hence, now, 30 cents is the price. Then taking an average and making it all high water, or a good stage of water, which it is supposed can be maintained between here and New Orleans, the average rate through the year would be one-half. Not one-half less than the high-water rate, but the average of the season, the cost of the freights would be reduced one-half.

By Mr. NORWOOD:

Q. Is not Saint Louis a distributing-point for the principal products of the West?

A. Yes, sir; I think so, to a great extent.

Q. Through what channels of commerce does that produce, taking it in the aggregate, seek domestic and foreign markets?

A. There are certain kinds of produce, the bulk of the produce I suppose, goes South. The more valuable portion goes by rail East, seeking the Atlantic board.

Q. What do you mean by "the more valuable?"

A. Higher-cost freight. Flour, and the valuable exports, we will say corn, oats, and grain, generally, I think, so far as it goes abroad, goes South. The manufactured articles, like beef and whisky, flour, &c., and that kind of freight, I think the large bulk of it goes—

Q. Well, confine yourself to bread. Do you mean to say that the principal portion of breadstuffs distributed from Saint Louis goes South?

A. I think so, sir. The statistics that we gentlemen will furnish you, I believe determine that. I think they are kept at the chamber of commerce. I am not advised as to that, but I believe that is so.

Q. You don't know what proportion of these breadstuffs come down the Mississippi?

A. No, sir; I have not the data.

Q. Through what channels do they reach the South?

A. Through New Orleans.

Q. Taking the Southern Atlantic States?

A. The bulk of them go through New Orleans, I apprehend.

Q. Do you mean of the Southern Atlantic States?

A. Yes, sir; that is the question I understood you to put. As to how they found the market from this point to the South, I think the bulk of them goes to New Orleans and there are transshipped coastwise. For the last two years I have not watched very closely the southern trade, being more particularly engaged in the West and the North, but I think the parties are here to show how much of them go by rail from this point.

Q. Then they seek New Orleans with the disadvantage of a freight which is double what you think it would be if the river was improved?

A. I think it does, sir.

Examination of JOHN L. MCCUEN.

By the CHAIRMAN:

Question. I believe you have been engaged for a good many years in steamboating, have you not?

Answer. Yes, sir; a good many years.

Q. How long?

A. About thirty-three years.

Q. If you have any information which you can give us with reference

to the navigation of this river, or the importance of improvements, I should be glad to hear them without any other questions.

A. I feel a good deal interested in the navigation of the Mississippi. I am more particularly acquainted with the Upper Mississippi River and the obstacles and the natural obstructions there; much more so than below; still, I have been acquainted more or less with those below for the last thirty years.

Q. We would like to hear of those above as well as of the others, and anything you have to suggest as to them.

A. Our greatest difficulty there seems to be the rapids. The upper rapids have been very much improved within the last four or five years. The lower rapids, of course, have not been improved.

By Mr. NORWOOD:

Q. Improved how; by the Government?

A. Yes, sir; nothing else would improve them. They are solid rock, and consequently have to be blown out or chiseled out. The Government has spent an immense amount of money to improve the lower rapids, all which as yet, of course, has been of no benefit to navigation. We still want a little more to complete it. Then we are under the impression that it will make a great change in the price of freight and the speed with which we shall go through. They have spent several millions there, but it has been spent in such a way that a great deal of it has been lost. I was up this season looking into it, to see if the matter could not be pushed on a little faster, making some complaints to the parties in charge. They complain that the Government has given them such small sums that it was partially wasted away by the time the next appropriation would be made. I do think that the work has been delayed much longer than necessary, even with the amount of money that has been appropriated. Responsible parties will agree to put that work in safe operation in twelve months with a reasonable amount of money, and give any security necessary.

By Mr. DAVIS:

Q. What is the "reasonable amount of money" which you allude to?

A. A reasonable amount would be from six to eight hundred thousand dollars. I don't mean by this that it would entirely complete the work, but I do mean that it would put it in condition so that we could navigate without any trouble. Then some portions of it afterwards could be finished. The banks, ripraps, &c., could be finished afterwards. That would be one of the most valuable improvements on the whole Mississippi River. The lower rapids, called the Des Moines rapids, is a first-rate job, well done.

By Mr. SHERMAN:

Q. It is a canal, isn't it?

A. Yes, sir. If the toll expense will be reasonable or small there it will make an immense difference in the price of transportation. You are charged 12½ cents for freight to or from Keokuk, which is just below the rapids, and as soon as you get above Fort Madison, twenty miles, we there charge 25 cents. We make more money on the 12½-cent freight than on the 25-cent freight; it is only thirty miles from there.

By Mr. DAVIS:

Q. Would 25 cents be a reasonable charge, carpenters' measure, as they term it?

A. It don't pay well at 25 cents a hundred.

Q. No, no; I mean the charge for the use of the canal—tolls.

A. Twenty-five cents for what?

Q. Calculating the vessel.

A. I don't understand your question. Twenty-five cents a ton, do you mean, on the freight you bring over?

Q. Yes, sir.

A. No, sir; I think 25 cents would be too much.

Q. What do you think would be right?

A. I figured on that a little with other steamboat-men engaged with me in the business there, and we have thought that 15 cents a ton would be, if it could be managed and carried on and kept in order, a very liberal price; that is to say, a fair price; as low as we should expect it to be placed.

Q. What would be the expense to—in other words, would the 15 cents defray all the necessary expenses of keeping in repair and the necessary men employed there?

A. Yes, sir; it would pay every expense that would be necessary, and keep it in order, and have everything attended to, at 15 cents a ton. We would then have a much larger amount of freight both ways carried than now, of course.

A. You say you have estimated it. How much is your estimate that it would yield in round numbers at 15 cents?

A. I could not give you those statistics just now, from the fact that we estimated somewhat in this way: We pay the railroads, if you choose, 75 cents a ton, we having all the labor putting it into the cars and taking it out. When we can cross the rapids with a little tow-boat that we have for that purpose, towing flats that will draw about 20 inches when loaded, we can bring it over for 40 cents ourselves. But, as I say, when the railroad brings it, we pay them, as is the case now, 75 cents. The labor in getting it on the flats from steamers, and back again into the boat, is not the half that it is for putting it on to the cars. It has to be carried at some distance from the shoal and then back. We were under the impression from figuring up that it would take but few men to attend to those locks, and the work is of such character that it will take but a small amount of money to keep it in order after it is once finished. It is as fine a job of work, so far, as I have ever seen. I have been over it every year since it has been started.

Q. What would be the length of the canal?

A. The whole length of the rapids is twelve miles, but the length of the canal proper would be about nine. There, however, we will have a wing-dam thrown out that will give you a sufficiency of water above nine miles up to the end of the twelve. The canal commences at the end of the rapids at Keokuk and runs up about nine miles. With a first-rate dike completed all the way from Keokuk up the nine miles, except a little riprapping that we have to do, the dike is completed. It is made out in the middle of the river, which forms the canal proper.

Q. So as to give us an idea of the value of the improvement, what proportion of the year can you pass over now by lightening, and what proportion do you have to use the rail?

A. That is somewhat irregular, because at some seasons we have much better water than others.

Q. What is the average as near as you can get at it?

A. I suppose from two to three months in the year we have the railroads engaged for that purpose. We now have a train chartered for our own use all the time to run backwards and forwards for passengers, and then we pay them so much a ton for freight. We pay them 50

cents for each passenger, and if the amount we send don't pay them so much a day, we agree to pay the balance.

Q. Then, I understand you, from two to three months is the average, and you have nine months only in which you can get over and do the work with your own lighters?

A. No, sir; I did not mean to convey that idea. I meant to convey the idea that we have from two to three months that we have to use the railroad, sir, altogether; then a part of the time we use our own lighters to tow; then a part of the time we pass over uninterruptedly, and then part of the time the river is closed. Say three months it is closed. Therefore that makes the twelve months.

Q. If there is any other general statement that you wish to make, we should be glad to hear you.

A. I will say that the Government has improved the upper rapids, which I will first explain. It has been improved without any locks, merely by building coffer-dams and blowing it out. They have blown the channel out 200 feet wide. That answers our purpose as to width very well. But unfortunately when you come to make a turn the curve is so short that you cannot make it in safety. I took the wheel myself to try it this summer to see how the thing would work, and whether it could not be put through a little more scientifically, but I couldn't do it quite as well as the pilot, and struck the rock in making the curve.

Q. With the completion of the canal you would have no further difficulty there, and want no railroads?

A. No, sir; that is the lower rapids, the Des Moines rapids; that will answer our purpose exactly; that is in a fair state of completion, and with a little more money it can be done. It will obviate that difficulty entirely. The upper rapids, however, want a little more work. These curves must be blown out where the turn is; it is too short. There must be some more work done there. They could chisel it out with large chisels without the expense of blowing it. There must be some more money spent there to make them equal to the lower when completed. With a little more money there the navigation of the whole river, then, would be pretty much the same from Saint Louis to Saint Paul. With a little money we can have a first-rate river from Cairo to Saint Paul, by that kind of improvement. I would here remark, as to the money which has been spent by the Government on the Missouri River, that we never were able to tow any barges there at all until recently. Since they have improved that river by taking snags out, steamboats can now tow barges pretty safely up and down. It has improved immensely.

By Mr. NORWOOD:

Q. What distance?

A. Up to Saint Joe; some five hundred miles.

Q. Do you mean five hundred above this point, or the mouth of the river?

A. Five hundred above this point. It shows that money has not been uselessly spent even upon that river.

Mr. GOULD recalled at his own request.

Mr. GOULD. I wish to say in regard to the Missouri River, to which Mr. McCuen has just referred, I had intended to have spoken of this matter when I was giving my testimony heretofore. It is this: We have had some small appropriations for the Missouri River, and very small; sufficient barely to test the practicability of removing the snags from

the river in order to make it more navigable. I want to say, as I believe the engineers have said in their reports, that with the small appropriations that have been made there have been very material improvements made in the navigation of that stream. As you all know, it is a very long and a very important stream, in the character of the navigation. It has become almost useless to commerce and the rail has the monopoly of the carrying trade along the Missouri, but by small appropriations each year the Missouri might be made as navigable, or very nearly so, as the river from here to Cairo, and made entirely practicable for the use of barges as stated by Mr. McCuen. We have this fall, for the first time, towed barges in the river successfully, but only as a matter of experiment. By a little appropriation each year, by the same means that have been resorted to by the snag-boats which are now built, it is believed that a very practical navigation may be made for barges, and this year I refer to it particularly as there will be an effort made, I trust, by representatives in Congress in that interest for a large appropriation of money for the improvement of the Missouri River. As the reports will be before you, I think you will very readily concede that there is a very great advantage to commerce to be derived from small appropriations annually to the Missouri. I knew your inquiries were made particularly as to the Mississippi, and hence I said nothing of the Missouri when before you, but you are all familiar with the very great length of that river, and also, of course, to some extent, of the commerce of the river that would seek it as an avenue to the markets by comparatively small appropriations.

By Mr. NORWOOD :

Q. You said you had been on the Mississippi for thirty or forty years, I believe?

A. On the western rivers. I have navigated on all of them more or less.

Q. How long have you navigated the Mississippi?

A. Between here and New Orleans perhaps half that time—twenty years.

Q. How does the tonnage of the decade between 1850 and 1860 compare with the tonnage now between Saint Louis and New Orleans?

A. I think I stated that I did not think it had been much diminished, but probably it may have a little. What has been withdrawn in the withdrawal of steamboats, barges have been substituted, so that my impression is that there has not been very much difference between these two decades.

Q. You stated that the business now was about half the tonnage, I believe?

A. I don't think there was over half.

Q. How was that between 1850 and 1860?

A. Some periods of the year the same would probably be the case then.

Q. That the tonnage was twice the business?

A. Yes, sir; during what we call the low-water season, which is now over. I refer to this time in the year, and not the whole year, in my answer. I did not mean to say that the aggregate of 1873 would not be over half of the tonnage we had capacity for, but at a time during the low-water season, which is about four months.

Q. There is a good portion of the time, then, that you say this tonnage was not employed?

A. Yes, sir.

Q. Was or wasn't that business profitable?

A. No, sir, it was not. Prices were necessarily so high that the freights were either retained or shipped by rail.

Q. Why did capitalists engage in that business if it was not remunerative?

A. They have been withdrawing it or changing it very much in the last ten years, and there are a large number of men whose boats have been diminished in number, and capacity has been increased, and instead of having a boat with a thousand tons capacity, that boat now has two thousand tons and employs only the same number of men, and the men who are now engaged on the river are not, as a rule, capitalists, and there is very little capital, as a rule, seeking that kind of investment.

Q. Didn't you say just now that the tonnage was about the same as it was between 1850 and 1860?

A. I said I thought that was so.

Q. And you say it is diminishing now?

A. Diminishing in one way and making up in the other in steamboats and increasing in the barges, and while a crew of twenty men will manage four thousand tons of freight in the barges, it would require twice that number of men a few years ago to manage a cargo of a thousand tons.

Q. How do rates of freight compare between these two periods I name? Give a percentage; I don't want you to itemize.

A. We have to guess at it. My impression is that rates of freight are not very much different. I have known freight, between 1850 and 1860, carried from here to New Orleans at a lower rate than that even carried now, and I know that they carried very much more. But the various years the prices fluctuate so much, in consequence of the higher or lower stages of the river, that I could not form a reliable opinion as to whether they were higher between 1850 and 1860, or at the present time.

Q. You were asked the question a while ago as to what effect you thought the proper improvement of the Mississippi River would have upon this commerce on the river.

A. Yes, sir; I answered that I thought it would be reduced one-half by what are believed to be good improvements.

Q. That is the effect upon freights; but I mean upon the commerce, what increase of business would there be?

A. That would be added indefinitely, as the country is just developing. We are producing five times as much as we were fifteen years ago.

Q. Would it affect foreign exportation or exports?

A. Very largely, as the quantity would be very much increased, I have no doubt, down the river, if the prices were made uniform. We are charging, for instance, from here to New Orleans 30 cents a hundred pounds, and it not unfrequently goes to 50 cents. If the improvements were made that are contemplated, I said that I thought the prices on an average would be reduced one-half.

ATLANTA, GA., December 24, 1873.

The committee met pursuant to adjournment.

Examination of Col. BUSHROD W. FROBEL:

Mr. CHAIRMAN. I wish to present to the committee a tabular report from the Chamber of Commerce of the city of Atlanta, showing the amount and value of farm products shipped through Chattanooga and Dalton south, and to Atlanta, by the Western and Atlantic Railroad.

TABLE 1.—Showing the amount and value of farm products shipped through Chattanooga and Dalton south, and to Atlanta, by the Western and Atlantic Railroad, 1872.

All freight in this column is shipped in car-load lots. Less quantities classed as "miscellaneous."	Pounds of bacon and lard.	Bushels of barley and rye.	Bushels of corn.	Barrels of flour.	Bales of hay.	Pounds live hogs.	Pounds cattle and sheep.	Bushels of oats.	Barrels of potatoes, apples, and onions.	Bushels of wheat.	Barrels of whiskey.	Number of horses and mules.
	114, 611, 379	40, 258	3, 325, 463	306, 655	99, 448	10, 096, 000	5, 904, 000	430, 699	29, 740	708, 863	26, 079	22, 000

Average value at Atlanta during the year 1872.

Prices given by Garrett & Bro. Wilkams, Langston & Crane, Wm. & R. Lowery, Cohen & Co., Cox & Hill, wholesale merchants, Atlanta, Ga.	11 c.	\$1.40.	85 c.	\$9.50.	\$33 pr. ton.	5 c.	4 c.	60 c.	\$5.	\$1.60.	\$50.	\$150.
	\$12, 608, 251	\$56, 361	\$2, 826, 780	\$2, 903, 232	\$635, 448	\$504, 800	\$236, 160	\$252, 419	\$152, 700	\$1, 134, 180	\$1, 303, 950	\$3, 300, 000

Total value, \$23,914,281.

Freight charges, Green Line rates, September 15, 1873.

From Saint Louis to Atlanta.	Pr. 100 pounds.	84 c.	63 c.	Pr. bushel, 37 7-25 c.	127 pr. barrel	63 c.	\$1.40.	\$1.40.	63 c.	63 c.	Pr. bushel, 37 4-5 c.	84 c.	\$1.40.
	Pr. ton.	\$16.80	\$12.60	\$12.60		\$12.60	\$28.00	\$28.00	\$12.60	\$12.60	\$12.60	\$16.80	\$38.00
From Saint Louis to Savannah.	Pr. 100 pounds.	75 c.	70 c.	39 1-5 c.		70 c.	\$1.40.	\$1.40.	70 c.	70 c.	44 1-10 c.	75 c.	\$1.40.
	Pr. ton.	\$15.00	\$14.00	\$14.00		\$14.00	\$28.00	\$28.00	\$14.00	\$14.00	\$14.00	\$15.00	\$28.00

Approved by Chamber of Commerce, November 18, 1873.

W. G. WHIDBY, Secretary.

A. C. WYLY, Vice-President.

Also, table No. 2, being a report from the Chamber of Commerce, showing the amount and value of various other products shipped by the same way to Atlanta from the West.

TABLE 2.—Showing the amount and value of various products shipped via Chattanooga and Dalton south, and to Atlanta, by the Western and Atlantic Railroad, 1872.

Prices given by Louis Scofield, President; M. T. Castleberry; Stephens & Flynn; Tourmey, Stewart & Beck; T. M. Clarke & Co; Mark Johnson; L Ben Wilson.

	Quantity.	Average.	Value at Atlanta during 1872.
Coal	37,872 tons	\$7 50	\$273,040
Cotton	16,938 bales	17 00	1,440,530
Furniture.....	215 car-loads	1,000 00	215,000
Lime	14,536 barrels	1 75	25,420
Lumber	73 car-loads	15 00	4,827
Iron, pig and scrap	714 car-loads	48 50 ton	277,036
Iron manufactures and machinery	193 car-loads	1,000 00	193,000
Salt	58,877 sacks	2 00	167,754
Slate	1 car-load	11 foot	286
Iron, railroad	350 car-loads	86 00	244,800
Miscellaneous freight	22,720 tons		
Total value at Atlanta during 1872			2,835,857

Freight charges, Green Line rates, September 15, 1872.

	Per 100 lbs.	Per ton.
From Saint Louis to Atlanta, Georgia—		
Coal	63 cts.	\$12 60
Cotton	84 cts.	16 80
Furniture.....	\$4 20	84 00
Lime	63 cts.	12 60
Lumber	63 cts.	12 60
Iron, pig and scrap	1½ cts. per ton	10 24
Iron manufactures and machinery	63 cts. to \$1 40	12 60 to \$28 00
Salt	63 cts.	12 60
Slate	No rates.	
Iron, railroad	1½ cts. per ton	10 24
From Saint Louis to Savannah—		
Coal	70 cts.	14 00
Cotton	75 cts.	15 00
Furniture.....	\$4 20	84 00
Lime	70 cts.	14 00
Lumber	70 cts.	14 00
Iron, pig and scrap	1½ cts. per ton	14 40
Iron manufactures and machinery	70 cts. to \$1 40	14 00 to 28 00
Salt	70 cts.	14 00
Slate	No rates.	
Iron, railroad	1½ cts. per ton	14 40

Value of produce, Table 1	\$25,914,281
Value of produce, Table 2	2,835,857
Articles classed as "miscellaneous" include everything not shipped by the car-load, such as poultry, game, tobacco, butter, eggs, hams, cheese, tongues, manufactured articles, merchandise, brandies, wines, teas, &c.; averaging this at 25 cents per pound, would give, miscellaneous freight.....	11,360,000
Total value	40,110,138

Approved by Chamber of Commerce, November 18, 1873:

W. G. WHIDBY, Secretary.

A. C. WYLY, Vice-President.

Also, table No. 3, showing the amount and value of the entire products exported from New Orleans, and the amount and value of same products shipped to Atlanta for the home market.

TABLE 3.—Showing the amount and value of certain products exported from New Orleans in 1871, and the amount and value of the same products shipped to Atlanta for the home market, supplied by this city in 1872.

	Bacon and lard.	Barley and rye.	Corn.	Flour.	Hay.	Live hogs.	Beef cattle and sheep.	Oats.	Potatoes, apples, and onions.	Wheat.	Whisky.	Horses and mules.
	<i>Pounds.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Barrels.</i>	<i>Bales.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Bushels.</i>	<i>Barrels.</i>	<i>Bushels.</i>	<i>Barrels.</i>	
Atlanta	114,611,379	40,258	3,325,483	306,656	99,448	10,096,000	5,904,000	430,639	20,740	708,863	26,079	22,000
New Orleans	4,573,371	33	508,945	163,146	334	<i>Pork.</i> *248,066	<i>Salted.</i> *707,200	34,300	<i>Bushels.</i> 16,741	12,510	<i>Gallons.</i> 1,694	37

Market value of same.

Atlanta	\$12,608,251	\$56,361	\$2,826,780	\$2,903,232	\$635,448	\$504,800	\$236,160	\$252,419	\$152,700	\$1,903,950	\$1,303,950	\$3,300,000
New Orleans	549,881	50	404,395	1,075,165	9,297	28,809	43,791	19,110	20,518	17,760	2,050	11,410

*There being no hogs or cattle shipped from New Orleans, we credit that city with all the salt beef and pork shipped for one year.
 NOTE.—Amount and value of exports from New Orleans taken from the report of the Bureau of Statistics, Commerce and Navigation, 1871 and 1872. Amount of products shipped to Atlanta taken from the report of the Western and Atlantic Railroad. Value of same given by the Chamber of Commerce of Atlanta, Ga.
 To Atlanta, total value, \$25,914,281. From New Orleans, total value, \$2,181,176.
 Total value of the same articles exported from New Orleans in 1872, \$1,875,068.

The governor has requested me to present to the committee some letters in relation to the iron interests of the State of Georgia from various gentlemen conversant with the subject. They are as follows:

ROME, GA., *July 5, 1873.*

DEAR SIR: Your request for certain information, of the 30th ultimo, is received. I will answer your interrogatories to the best of my ability.

The coal in the Coosa Valley extends over a large area of country. It is of excellent quality for any purpose, and easily mined. This coal-bearing region is about twenty-two miles from Selma, Rome and Dalton Railroad, but very near to the Coosa River. Its extent I cannot tell, because I do not believe it has ever been thoroughly explored.

The deposits of iron-ore are enormous, and are of the variety known as red hematite or fossiliferous, and this region extends from Brierfield, Ala., to Chattanooga, Tenn., and from Gadsden, Ala., to Ringgold, Ga., and in some places are contiguous to the coal and limestone regions. The quantity of brown hematite iron-ore along the line of the Selma, Rome and Dalton Railroad is so abundant that I do not think it can ever be exhausted, and from it iron is manufactured which is of such a superior quality that for many purposes it is used in preference to any other iron that can be procured in the whole country. The average yield of pure metallic iron from any of the above-named ores is over 50 per cent.

The average cost of manufacturing pig-iron at the furnaces here is \$18 per ton, and its value at the furnace is from \$45 to \$52 per ton, according to its quality, or whether it is hot or cold blast iron. The market for this iron (after supplying the home demand) is Louisville, Saint Louis, Cincinnati, Charleston, Philadelphia, Richmond, and New York.

Railroad is the only means of transportation, except for a short distance, on the Coosa River from one or two furnaces, and the average cost on railroad for freight is about \$10 per ton.

I think the principal drawback to the full development of our iron interests is the excessive freight charges which we are compelled to pay over the different railroads, not only on the pig and manufactured iron, but on everything which we are obliged to get from a distance to build our furnaces and shops. Another drawback is that our people do not appreciate the value of furnaces and manufactories, and it has only been recently known to them that they had such an abundance of minerals in their lands; and, again, they are too poor to make such investments as are required to make the manufacture of iron a success, together with a want of appreciation of skilled labor to manufacture anything else to any extent; and if their pecuniary condition was better, they would naturally hesitate to make large investments in any business with which they are not thoroughly familiar. There are but few iron furnaces or manufactories in Georgia or Alabama, except those owned almost wholly by capitalists from other sections.

I have above answered as far as I can the questions propounded, and will be pleased to answer any further questions that will aid you in the great enterprise you are so heartily encouraging.

I have the honor to be, sir, yours, very respectfully,

JAS. NOBLE, SR.

Hon. J. M. SMITH,
Governor of Georgia.

OFFICE OF ROME RAILROAD COMPANY,
Rome, Ga., July 9, 1873.

DEAR SIR: Your esteemed favor of 30th ultimo received on my return to-day from the Cornwall Iron Works, where I have been for the past week. I have been living here for the last twenty-five years, and have participated in most of the improvements going on during that time in developing this section of country, which is still comparatively new, especially when we speak of the coal and iron interest. Previous to the late war but little attention was paid to that interest, being mostly agriculture. In 1848 the railroad from Kingston to Rome, twenty miles, was completed, and a steamboat built and run, in connection with this Rome road, on the Coosa River, as far down the river as to Greensport, at the head of the Ten Island Shoals, one hundred and seventy-six miles into Alabama by water, and eighty miles by land through a new country. Being frequently on the boat, I became familiar with the country, and I recollect very well the largest cotton-planter on the river was a Colonel Smith, and he made nine bales of cotton, but the navigation of the river proved a success, and the country in a few years became opened out and settled up, the lands being very rich and well adapted to cotton, as well as corn, wheat, &c. In a few years we had to put on more boats, and there were farms on the river producing and shipping from one to two hundred and fifty bales of cotton, all of which found its market this way. Since

the war there has not been so much cotton made on this valley, but still the product of those farms is one of our main supports for the city of Rome, and we continue to run steamboats regularly the year round, and transport the United States mails down and back twice a week.

Since the war the labor on this river has been more diversified and less cotton planted. The development of the iron was commenced down the river before the war, and abandoned during the war, furnaces having been destroyed by the Federal Army, but they have been rebuilt and are now rebuilding. This, of course, takes a great deal of the labor from agriculture, and creates a greater demand for the cereals; consequently less cotton is planted. The Coosa River ten miles below Rome, running westward, comes to spurs of Lookout Mountain, and from that bears a little south of west a distance of about twenty miles to where the mountain at times becomes very near, all the way to Greensport, where the river makes through, forming rapids which are unnavigable, and boats can't go farther down. The iron-ore of the best fossil ore and brown hematite makes its appearance from ten miles below Rome to Gadsden, a distance of fifty miles by land, in any quantity and convenient for mining. The coal is bituminous, works well in blacksmith-shops, and lies near to the top of the mountain, in veins varying from 12 to 36 inches in thickness; and a distance of three to eight miles from the river there seem to be three veins or strata of coal in this mountain, as it has been discovered cropping out in those gorges of the mountain, first near the top, again 100 feet below, and again a distance of 150 to 200 feet below the first, and it seems to be abundant all over and through the mountain. I have heard of much thicker and larger veins of coal on the mountain, but I speak above of what I have seen myself. A great many, and indeed a large portion, of those coal-lands are public or Government lands.

I first gave you my observation of the Coosa Valley, which was developed by and brought into notice by the navigation of steamboats; otherwise it would have been to-day waste, as it was when I, as one of a company, put steamboats on the river. The coal and iron will lie there until the transportation is placed there for its removal. Twenty-three years ago Major Cooper, of the Etowah Iron Works, in Bartow County, had his coal transported up the Coosa River from those same coal-beds to Rome, and from there by railroad to Etowah; but when the mines were opened above Chattanooga, he found it cheaper to get his coal there, on account of transportation. Cooper spoke of being well pleased with the coal.

We, in making pig-iron down the Coosa River, twenty-eight miles below this place, use charcoal exclusively as yet, and that is an expensive iron, as you no doubt are aware, but a very superior iron. Before the war we made iron down there at a cost of \$15 per ton. Then the timber for coaling was convenient, and the coal short hauls; now it requires a great deal more teaming, and the expense of labor is so much increased that I consider every ton of iron made at Cornwall now costs \$23 to \$30 per ton. Then, however, our iron was worth \$20 to \$22 per ton in Rome, now it has ready sale at \$50 to \$53 here. You will see, therefore, money in it at present prices.

A road penetrating into those coal-fields, no telling the number of furnaces would build up along the line; in fact, I consider the iron sufficient to supply the building of a furnace for every half mile on the road for fifty miles. Transportation is all that is needed to build up and develop one of the richest countries for minerals anywhere to be found. The valley lands are rich and productive; the mountains worthless for cultivation, fine climate, and good water. To show you the plentifulness of corn made there to supply those furnaces, at the works last week, of parties coming in to sell corn, one had 1,000 bushels, within one and one-half miles of the furnace, of his last year's crop, to sell, and another farmer, three miles off from furnace, proposed to sell 1,200 bushels corn. I mention this to show you what a desirable country to develop mining and manufacturing interests.

Excuse the length of my communication, written in great haste, and written from my own experience and observation causes it always to be an interesting subject, as I have been, and am now, interested in most of these enterprises.

I have the honor to remain your excellency's humble servant,

WADE S. COTHRAN.

His Excellency J. M. SMITH,
Governor of Georgia, Atlanta.

KINGSTON, GA., August 29, 1873.

DEAR SIR: I regret that occupations requiring a constant absence from home will prevent my answering as fully as I would desire your excellency's inquiries in regard to the coal and iron of northwest Georgia and Alabama. Gentlemen in Rome have agreed to furnish information in regard to the coal and iron west of that city in Georgia and Alabama. My remarks will therefore be confined wholly to northwest Georgia.

COAL.

The coal in Georgia is found only in Lookout Mountain, the carboniferous formation not extending east of it. The Lookout coal-field in Georgia is about forty miles long

and varies from five to twelve miles in width. The mountain extends from Chattanooga, in Tennessee, to the Coosa River, at Gadsden, in Alabama, upwards of eighty miles. I do not know the number of coal-seams in the mountain, but it is great. In some portions of the mountain both the upper and lower carboniferous formations exist. In those instances the number of seams is of course increased. I have seen the coal on the surface exposed by the plough, or on the roots of trees which have been blown down, and also at the base of the mountain, more than 1,000 feet below the plateau above.

The seams which have been exposed vary in thickness from 10 inches to 7 feet. The quality of the coal is not surpassed by any bituminous coals of the United States. This statement is based both upon ample practical test and by scientific analysis twice by eminent chemists in Philadelphia. It will be observed that this coal formation runs down to the very bank of the Coosa River, which is a material portion of the proposed water-route from the west to the Atlantic. The whole of this vast body of coal is now lying imprisoned by sandstone walls, and therefore is useless to man. The proposed canal will liberate it by affording transportation, and give cheap fuel to thousands who now suffer for want of it.

IRON-ORE.

It would be difficult to give upon paper an adequate conception of the extent and value of the iron-ore in northwest Georgia within easy reach of the proposed canal. If we take a given distance of, say, thirty miles on either side of the canal, the iron-ore of the following counties would be rendered available, viz: Floyd, Chattooga, Bartow, Cherokee, Polk, and Paulding. Short lines of railway would bring in as many more counties as tributaries in iron to the canal.

The quantity of this ore cannot be exaggerated. I have literally passed over acres of land in which in walking it was difficult to avoid stepping upon iron-ore. Pennsylvania iron men who have visited this section have been confuted by the amount and variety of the ore, it being so different from the small scale of the ore-beds with which they have been previously familiar. As an illustration, an unbroken ridge, called "Shinbone," extends along the eastern base of Lookout Mountain for more than eighty miles. This ridge is also for the whole distance an unbroken vein of iron-ore. It is never more than a mile from the base of Lookout Mountain, in which the coal is found. For this whole distance coal, iron-ore, sandstone, fire-clay, limestone, and endless forests are in juxtaposition. Can there be a more favorable combination for the manufacture of iron? But this affluence of mineral stores is at present useless; there is no transportation. One of the counties above mentioned, Chattooga, is literally girt by walls of iron-ore. Pigeon Mountain on the north, Taylor's ridge on the east, Shinbone ridge on the west, and Dirt Sellers' Mountain on the south, and yet there is not an iron furnace in the county—capital and transportation are wanting.

For twenty or thirty miles east of Lookout Mountain, during its whole length, the iron-ore is entirely sedimentary and fossiliferous. For certain purposes it is a very valuable ore. I saw a train of nineteen cars loaded with this ore leave Birmingham, in Alabama, more than one hundred and fifty miles below Chattanooga, for some point in the State of Indiana.

East of Taylor's Ridge and south of the Etowah River every variety of ore is found for the manufacture of iron and steel. It would be impossible to specify the ore-beds in these counties.

Bartow and Floyd counties have railroad transportation. The iron interest has begun to be developed in them. In Floyd, besides a rolling-mill and nail-factory, there are quite a number of furnaces in full blast. In Bartow the number of furnaces is perhaps equally great. The iron interest in this county, Bartow, is comparatively new. Yet the gross annual sales of iron, lime, lumber, manganese, and hydraulic cement in this county alone will amount to more than \$1,000,000, independent of agricultural products. The iron interest is in its infancy. Many beds of ore are still untouched. The most favorable place for the manufacture of iron is lying idle. That place has been well known as Cooper Iron Works, from which shot, shell, and cannon were furnished to the confederacy. That place is so remarkable that it deserves more than a passing notice. I quote from a report made to the Georgia legislature in 1860: "Etowah River passes through the premises above five miles, with a succession of shoals, affording an aggregate fall of 120 feet in that distance, and presents six different localities, each with a fall of 20 feet. The river is 600 feet wide, never rises to materially overflow its banks, and is an unfailling stream." The iron-ore is abundant, and of the best quality of brown hematites. The proposed canal, if I am correctly informed, would leave the Etowah River near the base of these falls. It would afford cheap coal, and thus greatly reduce the cost of iron manufacture at this remarkable locality.

Give to northwest Georgia water transportation to the sea, and it will be a very short time before the iron-crop of Georgia will exceed in value its cotton-crop. The freight on pig-iron by rail from this county, Bartow, to New York, is \$10.50 per ton;

to Louisville, \$5.60; and to Cincinnati, \$6.92. Even at these high rates of freight, a large proportion of our pig-iron is shipped to the North. The cost of making iron with charcoal ranges, I am informed, at from \$18 to \$22 per ton. The value of the pig-iron delivered at the railway depot is about an average of \$40 per ton.

I have thus imperfectly replied to the inquiries contained in the letter of your excellency concerning the coal and iron of northwest Georgia.

There are other products of this section which are of importance, and some of which are now prohibited by railroad freights.

Manganese of good quality is found in considerable quantity in this county, and is regularly mined and shipped.

An excellent article of hydraulic cement is made near Kingston, in Bartow County. There is a peculiarity about this cement which makes it of importance to the Government in sea-coast constructions. It has been found that the sea air disintegrates the mortar made with the Rosendale cement, on account of the large proportion of iron which it contains. This cement contains a small proportion of iron, being nearly white in color. The houses on the battery in Charleston were rough-cast with this cement more than fifteen years ago. The work is still perfect, though the salt spray has been dashing against them all the time. This fact attracted the attention of the civil engineers at Fort Sumter and elsewhere before the war; but the high rate of railway freight prohibited the use of this cement.

The slate-beds of Polk County are a subject of material interest. The slate is in great cliffs. It is as free from iron and lime and is as easily worked as the Welsh slate. A short railway of twenty miles connects these slate-beds with the Western and Atlantic Railroad, through which it is now shipped freely to Saint Louis, Louisville, and Cincinnati. The proposed canal would cheapen roofing, both West and South, and give increased security against loss by fire.

Railway freights are a prohibition against the use of lime as a fertilizer. The application of lime is essential to the amelioration of soils which are destitute of it. This destitution exists in the primary formation, including nearly the whole of Middle Georgia.

The quantity of excellent limestone in northwest Georgia is inexhaustible. The proposed canal would enable the cotton-planter within ten miles of its line to use this valuable fertilizer with economy, and thus materially increase the cotton-crop.

The soil of the section of northwest Georgia, through which the canal would pass, is of the best quality of blue limestone land. Its comparative value may be inferred when it is stated that, while the lands of the cotton-belt may be bought at from \$5 to \$10 per acre, our best farms in this section will command \$50 to \$75 per acre. Although the cereals and the grasses succeed perfectly, cotton is also grown with complete success.

The material benefit of the proposed canal to the people of the South and West would be incalculably great. But its construction would be followed by still greater benefits. These would be national. I do not refer to the cheap transportation of ordnance and military stores in time of war, but to its social and political results. It would tend to bind the sections of country through which it passed more closely together. There are several instrumentalities by which people are said to be bound together. Some of these are ropes of sand, as the popularity of favorite leaders, the prevalence of ephemeral political dogmas, the strength of party ties, &c.

Railroad lines, long drawn out, are said to bind the sections in their route with bands of iron. But time, the atmosphere, and wear and tear destroy these bands, and they must be replaced.

It might seem a solecism to say that, in certain circumstances, water is a stronger bond than iron. The incoherence of its drops, which appears to be an element of weakness, on the contrary is an element both of utility and strength. It evades the tooth of time. It is incapable of rust. In motion, by its own law it replaces itself. In our mild climate the icy king is powerless over it.

How much the determination of the Western people, that the mouth of the Mississippi should never belong to a foreign people, had to do with the termination of the war it is impossible to say. But it is on all hands now conceded that the people who live upon its banks and the banks of its tributaries will live under one government; and when the proposed great artificial highway of water between the West and South is completed, it will also be conceded that the people who live upon or near its banks, while the water flows or seeks its level, will be one people.

Such enterprises in their consummation are, among the victories of peace, more potent and glorious than those of war.

Your excellency will allow an humble citizen to offer his hearty congratulations upon the leading part which you have taken in the inception of this material work.

It has been to the writer a subject of profound regret that, while our whole social system has been convulsed; while our pressing want has been for food and raiment; while, in the new order of things, the relations of capital and labor remained unadjusted; while domestic chaos reigned, our leading men, for the most part, have preferred to devote their great talents to the discussion of abstract questions in Government, rather

than the pressing earnest practical interests of the emergency. When we have asked for bread, they have given us, not a stone, but the dry bones of that which was, but is not.

Your excellency has chosen to concentrate your powers upon the great practical and pressing interests of the people over whom you preside. We are glad of it, and we are not alone in this appreciation. I have learned that the people of the West and Northwest regard with honor the man who has boldly seized the helm of this vast enterprise, and who, while he seeks the welfare of his constituency, will in one and the same act liberate them from the yoke of a cruel monopoly.

I have the honor to be your excellency's obedient servant,

C. W. HOWARD.

His Excellency GOVERNOR SMITH,
Atlanta, Georgia.

I also present to the committee the tables containing the amount and value of the farms and property of every kind and the trade on the Tennessee River, and other rivers immediately connected with the proposed work.

NOTE.—The accompanying tables show the population and productions of the counties lying immediately on and contiguous to the rivers (and their tributaries) that form a portion of the proposed route of the Atlantic and Great Western Canal, and to the canal itself. The figures are taken from the United States census for 1870.

The calculation includes the tributaries of the main rivers, inasmuch as they are all now navigable, or can be made so at a very small cost, and will be important feeders to the canal. Many of these tributaries penetrate regions that are capable of great development, but now languish for want of facilities for transportation. Some idea may be formed by comparing the improved with the unimproved lands, the acres of unimproved lands being nearly double the improved lands.

In addition to the productions enumerated, the following may be given for all the counties included in the tables :

Product of orchards and market gardens.....	\$733, 883
Product of forests.....	735, 306
Rye, bushels, 404,235.....	363, 815
Barley, bushels, 23,540.....	21, 186
Rice, 10,057,325 pounds.....	804, 586
Cheese, 67, 820.....	13, 564
Sugar, 710 hogsheads.....	71, 000
Total.....	2, 743, 340

Besides—

Milk sold, gallons.....	308, 525
Hemp, tons.....	655
Flax, pounds.....	130, 750
Maple sugar, pounds.....	228, 996
Maple molasses, gallons.....	184, 720
Bees-wax, pounds.....	61, 113
Honey, gallons.....	1, 223, 457

From these figures we find that there will be directly affected by this work a—

Population of.....	1, 966, 178
Land improved, acres.....	14, 509, 149
Land unimproved, acres.....	23, 727, 774
Value of improved lands and products of farms.....	\$356, 547, 307

Besides directly and indirectly affecting cotton, whose annual value at present prices is \$214,792,040, if the value of property and products in the section through which this work passes, and indirectly affected by it, were included, together with that along the Saint John's and other rivers of Florida, the mines of Georgia, South Carolina, North Carolina, and Alabama, it would swell the sum to four or five times the amount named. The amount of cotton affected by it equals nearly our entire export of that article, the export of all cotton, raw and manufactured, in 1871, being \$220,828,644.

TABLE I.—Population and productions of the counties on and contiguous to the Tennessee River and other rivers forming part of water-route from the Mississippi River to the Atlantic Ocean.

Counties.	Population.	Farms—acres im- proved.	Farms—acres un- improved.	Cash value of farms and farm implements.	Estimated value of farm products.	Value of live- stock.	Number of horses.	Number of mules.	Number of oxen and cattle.	Number of sheep.	Number of swine.	Value of animals slaughtered and solid for blaugh- ter.
<i>Counties in Kentucky on Tennessee River.</i>												
McCracken.....	13,988	40,593	51,323	\$1,714,661	\$652,105	\$304,971	1,359	887	2,932	4,110	12,600	\$102,671
Livingston.....	8,200	40,912	879,814	595,762	595,762	323,213	1,429	701	4,063	6,344	10,397	112,839
Ballard.....	12,576	72,420	133,203	1,673,129	632,835	627,670	2,851	1,562	6,791	7,041	29,430	215,290
Hickman.....	8,453	35,006	62,605	3,222,953	448,180	294,198	1,385	858	3,671	5,010	13,948	134,772
Graves.....	19,398	104,725	154,063	3,318,281	1,560,415	917,174	3,935	2,311	8,085	13,876	31,570	262,186
Marshall.....	9,455	59,134	113,548	1,257,739	767,763	437,841	1,331	1,019	4,903	10,552	23,927	163,977
Callaway.....	9,410	60,883	114,298	1,253,220	778,798	468,203	2,192	1,503	5,054	8,885	18,670	141,696
Crittenden.....	9,381	64,604	115,825	1,370,408	552,851	489,879	2,552	1,041	5,645	12,092	16,900	169,968
Caldwell.....	10,826	87,497	94,093	1,543,636	803,169	481,957	2,377	1,275	5,113	9,226	14,092	203,935
Lyon.....	6,233	32,475	52,512	338,804	364,663	234,363	1,116	578	3,381	3,486	8,782	81,944
Trigg.....	13,686	86,664	121,914	1,978,514	1,080,483	658,008	1,673	1,908	5,751	9,439	24,368	225,215
<i>Counties in Tennessee and Alabama on and contigu- ous to the Tennessee River.</i>												
Henry.....	20,380	110,172	152,962	2,744,630	1,327,686	461,870	1,579	994	5,733	8,939	15,652	292,188
Stewart.....	12,019	47,383	136,380	82,667	627,559	915,425	3,658	2,723	8,931	10,878	34,384	171,149
Weakley.....	16,866	113,457	237,846	3,573,413	1,393,025	803,853	3,914	2,673	8,975	13,034	38,935	145,559
Carroll.....	13,447	127,515	203,502	3,293,393	1,791,796	1,201,255	3,217	2,265	9,458	10,822	23,018	312,706
Benton.....	8,234	46,443	166,192	519,444	599,786	372,287	819	819	6,843	7,790	20,016	131,698
Humphreys.....	9,326	44,018	211,281	1,676,030	648,819	512,133	1,971	914	6,843	8,937	16,418	169,900
Dickson.....	9,340	50,534	153,606	1,431,290	533,057	366,935	1,622	997	5,615	6,955	11,557	102,957
Decatur.....	7,772	41,205	139,829	3,610,115	577,699	311,117	1,238	804	4,305	5,649	13,508	106,159
Perry.....	6,925	29,286	107,919	1,038,893	499,295	384,690	1,706	804	5,196	5,320	17,950	128,555
Hickman.....	9,856	57,329	252,280	1,472,042	975,199	536,926	2,374	1,790	7,038	6,997	32,559	185,294
Henderson.....	14,217	92,520	237,882	2,044,401	1,168,172	732,519	2,816	1,679	10,275	10,168	23,793	232,166
Wayne.....	10,219	56,957	274,637	1,268,732	766,893	645,740	2,500	870	8,456	9,674	24,841	212,362
Madison.....	11,768	51,005	162,290	1,356,862	746,785	502,919	1,993	267	8,147	5,605	17,020	134,092
Marion.....	6,841	33,211	166,204	1,040,866	499,367	356,903	1,571	730	6,256	6,741	15,359	132,934
Hamilton.....	17,241	68,958	194,317	2,502,675	571,856	448,540	1,875	733	7,433	9,146	13,693	159,185
Bradley.....	11,652	74,597	114,523	2,161,232	639,555	448,542	2,181	730	5,952	5,306	9,239	91,116
Rhea.....	5,538	32,723	99,055	1,051,510	717,727	262,130	1,152	243	4,481	5,306	8,098	81,477
Meigs.....	4,511	41,204	54,173	1,745,604	266,338	213,550	996	254	2,788	4,392	8,098	81,477

Chamberland.....	3,461	16,174	170,172	227,074	175,359	527	103	3,069	4,466	10,311	48,537
Roane.....	15,622	102,502	180,327	2,705,776	520,428	3,330	604	6,687	9,552	17,661	196,489
McMinn.....	13,969	98,734	136,900	2,464,076	530,128	2,336	713	7,076	9,839	16,552	291,297
Blount.....	14,237	91,740	126,546	2,532,687	540,884	2,847	476	7,505	10,898	15,725	181,745
Monroe.....	12,589	101,976	239,545	2,333,989	419,498	2,334	485	6,954	8,346	13,422	163,766
<i>Mississippi.</i>											
Tishomingo.....	7,350	28,068	136,775	534,128	273,615	1,117	430	5,637	4,547	9,183	67,270
<i>Counties in Alabama on and contiguous to Tennessee River.</i>											
Lauderdale.....	15,091	93,625	160,267	849,029	500,471	2,380	1,115	7,252	5,984	16,196	69,511
Franklin.....	8,006	41,036	172,123	539,049	309,542	1,382	499	5,542	3,075	8,608	79,448
Limestone.....	15,017	115,730	122,667	1,231,157	562,739	2,213	1,479	5,527	3,960	13,566	130,830
Lawrence.....	16,658	144,284	165,374	1,359,431	689,507	2,319	1,816	9,580	5,095	18,637	104,231
Madison.....	13,267	139,305	109,515	1,955,501	704,036	3,319	911	8,188	4,062	17,824	120,667
Morgan.....	19,871	80,749	165,457	837,236	453,375	2,462	660	7,845	4,062	14,844	107,250
Marshall.....	9,871	46,353	86,983	611,809	331,731	1,669	560	7,195	5,343	12,597	101,628
Jackson.....	19,410	77,086	183,397	1,590,310	620,263	3,541	814	11,945	9,745	25,837	213,038
De Kalb.....	7,126	44,188	69,175	1,581,401	328,799	1,363	397	7,070	6,627	13,094	109,096
Cherokee.....	11,132	61,448	123,878	665,213	371,513	1,406	772	6,230	5,835	11,750	101,569
<i>Counties in North Carolina on and contiguous to Tennessee River.</i>											
Cherokee.....	8,080	26,858	175,866	203,743	160,325	841	194	5,477	6,693	8,735	60,833
Jackson.....	6,663	24,852	208,281	308,737	186,947	1,032	170	5,558	5,098	8,152	60,116
Haywood.....	7,921	35,750	62,861	633,757	273,096	1,357	366	6,645	7,844	11,234	83,534
<i>Graham, (new county)</i>											
Swaine, (new county).....	2,461	13,991	70,754	174,333	131,155	587	223	3,048	2,154	5,376	41,382
Clay.....	6,615	34,795	302,443	353,442	270,548	1,307	319	6,888	7,848	10,620	65,965
Macon.....	8,192	32,804	282,804	550,280	175,426	732	566	4,535	6,670	10,567	55,167
Madison.....	15,412	66,135	244,909	771,337	459,868	1,966	907	10,584	12,355	16,135	134,077
Buncombe.....	3,536	15,096	87,668	340,041	156,478	904	196	3,909	4,721	6,490	36,995
Tennessee.....	7,706	42,569	125,681	469,231	239,719	825	360	6,596	6,235	9,817	50,331
Henderson.....											
<i>Tennessee.</i>											
Maury.....	36,989	82,518	174,170	10,964,907	2,682,211	8,464	5,346	17,898	21,330	53,124	641,314
Lewis.....	196,242	60,319	60,319	218,632	2,015,355	399	209	1,173	1,676	3,361	31,634
Marshall.....	16,307	91,168	193,389	3,858,983	84,664	6,202	2,598	9,155	16,218	32,038	358,598
Bedford.....	114,602	193,389	7,704,657	2,637,692	1,299,100	6,255	2,372	13,484	25,204	38,962	447,895
Coffee.....	10,237	342,013	2,472,887	598,277	1,471,691	9,506	503	4,860	8,107	17,226	157,145
Hiwassee.....	32,413	151,261	2,690,734	463,201	1,463,201	7,672	3,458	16,492	18,658	47,700	482,127
Lincoln.....	28,050	183,894	6,695,149	2,066,342	1,736,804	7,968	3,434	16,404	27,075	96,595	692,714
Sevier.....	28,990	189,562	257,694	1,116,430	2,153,471	4,907	913	11,308	13,441	32,519	240,620
Sevier.....	11,028	135,900	143,920	1,499,984	840,287	1,994	357	6,214	9,578	13,688	106,195

TABLE I.—Population and productions of the counties on and contiguous to the Tennessee River, &c.—Continued.

Counties.	Population.	Farms—acres im- proved.	Farms—acres un- improved.	Cash value of farms and farm implements.	Estimated value of farm products.	Value of live- stock.	Number of horses.	Number of mules and cattle.	Number of sheep.	Number of swine.	Value of animals slaughtered and sold for slaugh- ter.
<i>Tennessee.</i>											
Cooke.....	12,458	57,338	162,058	\$1,578,046	\$352,850	\$369,923	1,994	525	7,696	9,730	\$138,084
Jefferson.....	19,476	67,332	123,738	3,820,895	993,655	433,768	3,210	461	7,995	17,971	213,001
Anderson.....	8,704	118,132	112,032	1,035,803	344,492	652,822	1,783	261	5,598	9,773	103,543
Granger.....	12,421	50,750	66,925	1,751,554	553,925	337,678	2,233	350	6,918	17,723	152,300
Sequatchie.....	9,335	15,505	108,031	413,999	150,180	146,756	655	104	2,960	9,797	62,129
Blount.....	4,870	33,873	137,460	737,616	387,703	231,915	1,137	236	5,323	6,193	137,650
Morgan.....	9,969	19,948	125,097	984,078	162,877	133,759	1,515	71	3,291	9,532	37,498
Campbell.....	7,445	40,042	139,668	936,978	350,991	953,885	1,300	235	4,691	9,794	73,180
Clatsop.....	8,321	47,847	124,012	1,024,715	354,175	329,016	1,732	187	5,725	11,942	82,255
Hawkins.....	7,148	38,778	84,463	716,721	334,031	244,678	1,263	96	4,054	10,680	69,728
Union.....	15,837	116,798	147,066	2,434,754	815,053	593,066	3,192	417	9,796	21,700	136,575
Hancock.....	7,605	46,435	90,066	922,644	505,506	231,235	1,451	118	6,326	6,971	73,108
Washington.....	16,317	106,646	124,716	3,377,888	882,804	605,797	3,630	297	8,914	13,335	187,878
Sullivan.....	13,136	104,306	120,945	2,559,676	655,732	593,487	3,384	202	16,634	18,478	166,749
Greene.....	21,665	162,034	172,214	4,707,078	1,200,990	890,043	4,644	858	13,287	25,306	270,618
Carter.....	7,969	36,386	109,438	1,050,375	275,355	193,116	1,033	167	3,879	7,253	61,230
<i>Virginia.</i>											
Lee.....	13,268	75,731	148,527	2,229,740	647,474	377,280	2,314	110	7,561	11,523	194,462
Scott.....	13,036	70,449	158,017	1,216,862	344,562	324,857	2,598	191	7,421	13,415	86,522
Washington.....	16,816	145,802	186,254	3,515,867	942,725	575,073	4,292	442	10,456	14,733	164,231
Buchanan.....	3,777	14,055	195,060	300,446	130,596	114,847	503	79	4,518	6,686	24,413
Wise.....	4,785	24,698	195,215	519,351	121,144	142,860	779	64	3,830	6,891	34,982
Russell.....	11,103	74,209	132,531	1,708,654	410,249	469,105	2,251	469	10,322	13,113	92,054
Tazewell.....	10,791	63,404	154,914	2,414,613	347,905	422,581	2,025	205	11,285	9,539	105,407
Total for Tennessee River and tributaries.....	1,036,065	6,014,733	12,472,665	161,426,055	63,843,548	43,920,244	199,819	131,023	598,795	770,500	13,200,559

TABLE I.—Population and productions of the counties on and contiguous to the Tennessee River, &c.—Continued.

Counties.	Bushels of wheat.	Bushels of Indian corn.	Bushels of oats.	Pounds of tobacco.	Bales of cotton.	Pounds of wool.	Bushels of sweet potatoes.	Bushels of Irish potatoes.	Tons of hay.	Bushels of pease and beans.	Pounds of butter.	Gallons of cane molasses.	Gallons of sorghum molasses.
<i>Counties in Kentucky on Tennessee River.</i>													
McCracken.....	31,543	273,914	20,767	1,545,050	24	7,079	11,935	13,690	932	1,245	84,991	.....	18,723
Livingston.....	27,525	308,298	30,736	1,086,578	2	11,996	5,805	23,735	990	125	44,519	.....	15,510
Ballard.....	70,794	577,759	28,223	2,863,455	.....	12,001	17,220	16,138	745	543	97,914	.....	34,036
Blackman.....	48,190	350,860	6,005	570,287	308	10,416	2,350	9,647	233	363	53,650	.....	14,541
Graves.....	96,453	842,445	24,424	4,774,195	187	27,103	24,259	14,932	846	1,368	138,380	.....	41,980
Marshall.....	40,703	478,241	38,346	1,416,932	90	16,786	19,598	16,891	959	2,067	138,881	.....	37,673
Callaway.....	33,770	417,410	9,328	1,934,502	8	13,598	15,474	10,355	531	24	66,040	.....	32,220
Crittenden.....	43,203	403,948	17,487	1,970,776	8	13,598	4,556	13,510	987	239	64,405	.....	16,407
Cladwell.....	56,847	438,660	26,667	2,221,899	1	18,727	10,571	11,674	1,227	566	84,886	.....	21,619
Lyon.....	15,505	263,925	6,191	854,212	.....	5,684	4,955	7,603	532	173	52,530	.....	12,549
Trigg.....	98,371	589,820	16,114	3,614,363	.....	18,442	18,832	14,805	534	631	83,308	.....	9,306
<i>Counties in Tennessee and Alabama on and contiguous to the Tennessee River.</i>													
Henry.....	98,435	707,220	26,816	1,715,001	2,385	16,459	31,882	15,365	910	2,296	174,000	.....	31,277
Stewart.....	31,360	485,311	26,623	1,191,620	1,869	16,133	18,746	17,635	816	1,440	81,491	.....	10,335
Weakley.....	136,298	879,544	1,945	1,599,590	7	20,006	10,982	5,933	529	577	258,285	.....	27,209
Carroll.....	93,872	777,922	4,206	1,040	5,023	13,044	19,371	9,313	108	10	273,083	.....	8,065
Benton.....	25,753	357,403	18,986	412,435	696	10,288	17,829	18,502	408	7,675	96,798	.....	25,692
Humphreys.....	27,763	391,355	59,967	113,177	107	14,622	12,554	12,364	436	62,766	13,253	.....	5,586
Dickson.....	34,130	319,685	58,811	462,130	9	15,028	13,913	8,707	140	3,230	76,960	.....	11,418
Decatur.....	19,239	314,653	20,549	44,030	1,159	9,796	13,913	8,000	103	9,796	96,348	.....	4,891
Perry.....	34,537	368,045	9,312	5,244	495	10,429	6,264	8,000	435	519	43,659	.....	7,446
Hickman.....	41,536	514,554	34,992	18,935	755	14,953	17,364	15,226	454	43,150	121,556	.....	17,772
Henderson.....	41,974	547,075	17,397	15,124	4,191	15,923	30,736	14,948	783	1,152	142,847	.....	11,778
Wayne.....	47,426	484,461	19,314	26,769	1,101	17,556	14,947	13,367	2	2,457	103,030	.....	19,767
Hardin.....	98,124	965,100	15,151	300	2,026	10,275	10,472	5,338	107	86,919	142,827	.....	12,456
Marion.....	35,566	484,721	27,989	17,487	734	9,157	7,504	10,652	224	1,152	79,214	.....	11,778
Hamilton.....	103,716	359,700	44,989	1,855	1	12,912	1,480	2,175	1,033	.....	142,827	.....	10,651
Bradley.....	112,341	239,490	41,737	10,628	.....	14,826	6,286	12,810	1,482	254	135,976	.....	20,219
Rhea.....	32,639	187,970	41,737	10,276	6	9,068	6,108	6,185	1,382	74	51,599	.....	9,041
McGee.....	29,603	176,723	36,034	10,200	436	4,396	3,338	3,497	419	.....	47,101	.....	4,995
Meigs.....	1,585	42,377	9,115	13,098	.....	8,497	12,357	2,637	.....	165	57,679	.....	3,341
Cumberland.....	74,814	504,590	112,029	350	.....	14,027	11,609	12,838	1,671	168	199,545	.....	19,458

TABLE I.—Population and productions of the counties on and contiguous to the Tennessee River, &c.—Continued.

Counties.	Bushels of wheat.	Bushels of Indian corn.	Bushels of oats.	Pounds of tobacco.	Bales of cotton.	Pounds of wool.	Bushels of sweet potatoes.	Bushels of Irish potatoes.	Tons of hay.	Bushels of peas and beans.	Pounds of butter.	Gallons of cane molasses.	Gallons of sorghum molasses.
<i>Counties in Tennessee and Alabama on and contiguous to the Tennessee River.</i>													
McMinn	43,925	350,333	77,810	4,892	4	17,858	8,114	13,102	2,249	192	194,218	.....	19,436
Blount	107,819	394,553	104,501	675	.....	18,178	2,180	3,350	3,658	82	163,394	.....	13,080
Monroe	113,753	415,010	56,367	2,875	.....	15,354	6,284	9,208	2,177	20	1,050	.....	5,178
<i>Mississippi.</i>													
Tishomingo	4,319	188,836	6,048	3,999	1,397	6,937	4,849	18,578	10	1,186	94,627	.....	12,934
<i>Counties in Alabama on and contiguous to Tennessee River.</i>													
Lauderdale	24,126	447,155	12,526	1,714	5,457	11,643	4,908	4,603	.....	192	34,306	.....	9,045
Franklin	9,070	294,136	7,055	6,656	2,072	6,142	10,584	4,490	593	1,468	31,061	.....	5,869
Limestone	24,010	404,435	10,102	9,592	7,319	4,860	15,427	17,932	65	87	115,982	.....	5,238
Lawrence	20,233	519,673	14,217	6,324	9,243	8,297	14,143	7,005	.....	685	174,063	.....	12,065
Madison	36,878	674,625	13,223	8,736	12,180	5,730	23,437	10,366	383	533	78,373	.....	.....
Morgan	23,336	333,332	17,701	1,110	4,389	6,747	14,902	5,116	40	243	70,886	.....	11,877
Marshall	17,228	187,491	9,445	5,447	2,340	8,693	14,797	9,980	29	92	47,995	.....	10,299
Jackson	50,925	506,777	26,952	11,107	2,339	16,809	19,995	12,381	113	474	191,075	.....	18,021
De Kalb	26,880	309,904	12,088	6,707	2,905	11,909	20,488	8,241	172	1,543	91,042	.....	6,839
Cherokee	65,530	231,946	27,683	7,470	1,807	10,179	5,585	10,702	510	704	83,785	.....	15,151
<i>Counties in North Carolina on and contiguous to Tennessee River.</i>													
Cherokee	3,628	162,529	18,098	19,392	70	12,578	8,568	10,702	560	132	58,867	.....	13,270
Jackson	126,050	10,668	10,634	11,697	.....	10,634	7,116	13,235	283	620	64,032	.....	11,337
Haywood	40,734	206,998	26,879	18,692	.....	15,299	699	11,126	551	1,550	76,463	.....	17,369
<i>Graham, (new county)</i>													
Swaine, (new county) .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Clay	6,061	79,985	14,408	13,113	.....	5,811	5,597	4,618	221	247	42,052	.....	6,528
Macon	21,365	163,199	19,970	26,739	.....	14,964	10,235	10,837	1,007	1,095	64,601	.....	12,043
Madison	28,749	107,971	19,106	15,934	.....	12,007	1,322	7,566	360	1,459	65,675	.....	.....

TRANSPORTATION TO THE SEABOARD.

729

Buncombe	66,656	43,799	30,689	1	24,347	4,728	19,416	2,502	2,504	137,701	35,258
Transylvania	372	190	6,301	1	18,884	3,101	8,142	37	63	24,129	13,827
Henderson	4,348	21,101	22,686	1	14,434	7,377	14,960	417	1,902	62,916	16,319
<i>Tennessee.</i>											
Maury	200,764	61,367	14,245	9,367	35,544	24,962	28,570	4,114	663	167,372	11,131
Lewis	6,099	3,472	5,677	120	3,040	3,004	16,182	257	519	14,356	4,549
Marshall	126,633	83,691	12,748	2,063	34,545	16,556	16,182	1,734	342	170,658	17,674
Bedford	212,922	104,801	19,290	869	35,516	17,405	18,275	3,202	312	96,424	20,898
Coffee	43,073	25,462	13,387	30	12,597	11,726	13,870	451	11	53,631	11,099
Giles	145,635	70,519	40,655	8,367	34,259	28,074	32,556	1,644	976	228,560	31,023
Lincoln	202,447	72,179	31,837	8,745	48,113	23,103	29,982	1,258	3,734	318,703	35,210
Knox	1,253,960	259,047	26,532	2	26,398	24,243	25,702	5,765	315	222,468	21,660
Sevier	388,867	17,741	13,997	6	16,109	7,308	9,005	2,915	81	79,135	16,588
Cooke	388,867	45,239	17,741	71	15,074	6,218	9,631	3,682	211	82,963	20,046
Jefferson	527,853	132,453	10,162	1	12,864	11,063	10,918	3,823	107	73,563	25,709
Anderson	262,654	23,441	15,578	1	15,989	8,045	12,285	1,217	67	77,604	16,140
Granger	353,260	86,095	16,646	1	5,904	4,102	3,981	709	163	69,756	19,149
Sequatchie	102,010	6,915	9,353	1	5,904	4,102	3,981	286	104	31,435	3,520
Bledsoe	201,667	14,226	14,226	1	11,465	4,714	6,256	356	202	50,225	8,446
Morgan	1,561	15,548	7,944	2	9,197	3,415	9,910	485	66	29,225	3,446
Campbell	127,145	65,208	8,509	2	12,055	2,455	10,112	1,069	92	65,327	7,220
Glabonne	204,840	59,039	4,827	1	15,300	3,150	11,301	399	12	94,007	13,075
Hancock	204,190	41,308	9,978	1	13,967	3,439	10,453	583	5	55,029	8,409
Hawkins	466,470	112,306	12,370	864	26,124	4,956	13,889	3,354	130	117,468	23,554
Union	168,599	69,799	14,169	1	10,673	3,656	8,488	992	8	53,470	10,392
Washington	280,348	148,382	22,806	2	26,694	3,656	17,062	5,669	8	167,677	25,661
Sullivan	302,297	176,387	16,307	1	27,026	7,844	21,296	4,532	1,192	171,872	30,077
Greene	496,659	149,518	41,585	1	39,511	11,331	21,296	7,124	458	268,411	37,292
Carver	132,037	63,396	1,140	1	7,978	2,781	8,582	2,155	110	2,227	9,335
<i>Virginia.</i>											
Lee	81,620	66,831	16,557	1	21,864	6,116	12,108	1,246	763	132,547	17,107
Scott	53,582	66,730	27,864	2	24,249	4,361	8,544	1,150	187	95,354	13,980
Washington	106,521	351,732	183,147	2	28,936	2,486	11,353	5,008	739	187,010	20,503
Enochan	3,184	82,624	6,424	1	7,997	3,973	6,726	79	1,862	71,955	4,732
Wise	6,844	90,167	8,128	1	12,482	1,522	9,842	387	1,579	75,213	7,373
Russell	40,985	56,216	17,282	1	27,100	1,259	7,983	1,898	200	124,631	13,978
Tazewell	38,020	69,189	5,026	1	19,812	1,95	9,675	5,301	818	95,175	9,548
Total for Tennessee River and tributaries	16,139,811	3,834,615	30,236,145	95,941	1,360,130	854,897	873,653	105,670	177,153	8,551,422	1,300,786

TABLE II.—Population and productions of counties on the Coosa River and its tributaries in Alabama which would be directly affected by the construction of proposed canal.

Counties.	Population.	Farms—acres improved.	Farms—acres unimproved.	Cash value of farms and farm implements.	Estimated value of farm products.	Value of live-stock.	Number of horses.	Number of mules.	Number of oxen and cattle.	Number of sheep.	Number of swine.	Value of animals slaughtered and sold for slaughter.
Autauga	11,623	92,012	146,686	\$1,180,223	\$995,114	\$369,056	897	1,174	6,491	1,677	7,185	\$92,531
Baldwin	6,001	4,919	78,232	142,708	81,210	124,137	223	1,151	8,091	3,724	2,745	.....
Calhoun	13,980	68,234	143,363	1,358,953	713,006	339,112	1,186	986	5,753	3,441	9,521	93,302
Cherokee	11,132	61,408	123,878	1,332,354	665,213	371,513	1,406	772	6,230	5,835	11,750	101,569
Clarke	14,663	61,549	310,898	1,773,340	840,736	374,706	1,446	873	11,629	4,398	12,646	65,050
Coosa	11,945	64,905	205,245	639,107	1,040,736	472,805	1,406	1,184	9,065	4,546	12,689	119,843
Dallas	40,705	168,156	251,606	3,201,896	2,753,591	740,737	1,339	3,426	7,295	1,508	7,791	60,343
Lowndes	25,719	126,185	153,837	2,367,744	2,176,738	644,753	1,081	2,706	5,167	766	4,966	53,443
Macon	17,727	125,944	120,955	1,531,731	1,281,587	415,070	1,872	1,653	6,391	890	4,996	33,636
Mobile	49,311	13,924	95,818	591,956	393,777	932,580	451	492	8,109	3,013	5,567	53,443
Montgomery	14,214	53,175	231,949	701,802	921,752	394,212	1,068	975	10,674	3,237	10,746	68,512
Perry	43,704	222,200	167,543	3,853,961	3,403,382	491,109	1,823	4,250	5,399	2,374	13,908	90,153
Randolph	24,975	97,977	114,490	1,530,858	1,476,355	370,810	929	2,160	9,860	7,465	14,519	119,803
Shelby	12,006	62,023	189,043	720,954	718,695	311,018	1,313	845	6,603	3,594	9,787	86,608
St. Clair	8,360	48,376	147,957	552,886	692,911	311,018	1,174	652	4,165	3,578	8,775	16,788
Talladega	18,064	34,055	102,436	419,336	391,114	252,095	970	452	5,333	2,355	6,947	76,834
Tallapoosa	81,579	122,924	192,984	985,519	1,084,387	400,156	932	1,766	8,251	3,538	12,789	138,673
Washington	16,963	88,902	185,417	506,937	1,053,798	460,999	1,224	1,198	8,251	2,389	5,024	6,551
Wilcox	3,911	14,778	65,438	162,085	160,312	167,741	403	214	7,376	2,897	17,020	52,416
Baker	28,277	165,907	204,682	2,421,554	2,550,667	957,754	1,702	3,418	12,072	4,687	9,171	53,483
Bullock	6,194	117,136	117,136	303,263	349,587	237,442	1,008	295	7,368	4,767	11,045	325
Bullock	24,474	115,310	167,126	303,263	2,008,451	715,225	1,277	2,381	9,333	2,732	11,045	79,137
Clay	9,560	37,348	121,971	494,543	593,139	310,795	959	561	6,412	3,934	10,371	78,896
Cleburne	8,017	42,267	129,650	524,192	480,591	263,116	960	594	6,541	3,871	10,659	80,314
Elmore	14,477	73,524	239,660	968,101	1,514,157	440,747	944	1,411	6,518	1,716	8,266	59,034
Etowah	10,109	37,277	128,475	788,256	249,043	249,043	923	479	4,723	4,950	8,649	13,537
Marengo	26,151	141,368	227,420	2,839,614	3,034,675	770,674	1,377	3,629	12,431	1,763	16,531	13,537
Total	485,583	2,135,054	4,285,626	33,207,630	31,900,474	11,653,053	28,983	38,717	106,066	85,734	265,696	1,601,222

TABLE II.—Population and productions of counties on the Coosa River and its tributaries in Alabama, &c.—Continued.

Counties.	Bushels of wheat.	Bushels of Indian corn.	Bushels of oats.	Pounds of tobacco.	Bales of cotton.	Pounds of wool.	Bushels of sweet potatoes.	Bushels of Irish potatoes.	Tons of hay.	Bushels of peas and beans.	Pounds of butter.	Gallons of cane molasses.	Gallons of sorghum molasses.
Autauga.	909	191,153	5,568	285	7,965	2,060	36,660	2,154	209	4,917	25,542	2,096	.....
Baldwin.	.....	31,095	.....	50	87	9,864	19,411	17	79	343	4,870	.....	75
Calhoun.	79,818	238,451	29,030	1,500	3,038	4,340	16,776	3,867	55	969	88,463	.....	10,795
Cherokee.	68,530	231,946	27,683	7,470	1,807	10,179	24,675	4,938	510	764	83,785	.....	13,151
Clarke.	.....	227,031	490	175	5,713	789	49,550	.....	60	256	9,780	.....	2,570
Coosa.	36,066	262,883	20,513	534	3,893	6,960	30,508	1,687	2	6,431	91,961	.....	1,463
Dallas.	1,295	436,701	18,101	130	24,819	1,926	35,908	5,567	366	2,956	63,122	665	.....
Lowndes.	1,787	453,187	10,901	.....	18,369	385	23,225	1,689	148	265	55,517	205	.....
Macoupin.	2,429	163,661	31,680	282	11,872	1,854	20,755	30	30	3,060	45,894	1,630	.....
Mobile.	.....	61,350	185	80	317	7,532	67,116	10,394	961	4,341	1,148	10,629	.....
Mourne.	10	232,466	3,011	.....	6,172	4,568	44,788	1,418	1	2,099	45,037	1,599	.....
Montgomery.	2,040	602,549	3,045	10	25,517	901	25,648	2,074	5	1,281	3,403	8,188	.....
Perry.	419	341,985	1,935	.....	13,449	695	13,800	200	.....	20	.....	.....	.....
Randolph.	48,587	264,448	20,707	7,677	2,946	13,262	37,758	1,144	9	762	125,066	.....	4,804
Shelby.	30,975	221,613	26,189	2,710	2,104	6,983	22,358	2,602	360	582	73,099	3,547	3,785
Saint Clair.	29,776	157,268	7,944	1,293	1,944	4,451	6,633	693	.....	75	32,677	280	1,819
Talladega.	63,381	284,783	42,821	225	5,697	5,784	14,469	772	75	1,162	53,167	797	170
Talapoosa.	46,409	267,764	33,353	75	3,446	10,439	26,236	.....	.....	.....	.....	.....	.....
Washington.	.....	660,978	.....	635	1,803	5,103	14,260	363	1	130	315	.....	.....
Wilcox.	2	57,034	1,725	189	20,095	2,611	91,460	1,472	9	533	47,428	.....	628
Baker.	11,798	131,311	6,238	3,256	1,360	7,656	33,071	425	.....	3,986	46,293	.....	437
Bullock.	384	389,791	13,682	.....	17,972	656	33,021	239	1,756	3,053	50	.....	12,364
Clay.	38,422	196,866	17,005	9,005	1,143	6,948	8,297	28	.....	400	123,464	.....	9,286
Cleburne.	36,739	186,763	19,853	10,997	6,948	6,496	15,679	1,868	5	696	83,965	.....	9,999
Etowah.	10,330	198,371	18,078	115	7,285	2,547	32,560	335	.....	5,697	57,673	.....	20
Elmore.	41,128	181,034	9,300	4,441	1,383	13,791	16,745	2,321	15	252	58,057	.....	13,545
Marengo.	20	598,938	11,538	370	23,614	2,135	38,691	1,733	.....	330	164,391	.....	45
Total.	558,466	7,276,200	380,536	57,594	215,378	140,013	798,618	48,050	4,668	51,124	1,384,167	29,636	87,018

TABLE I.—Counties in Georgia and contiguous to the Etowah and Ocmulgee Rivers and tributaries which form a portion of the line of the proposed Atlantic and Great Western Canal.

Counties.	Population.	Farms—acres im- proved.	Farms—acres un- improved.	Cash value of farms and farm implements.	Estimated value of farm products.	Value of live- stock.	Number of horses.	Number of mules.	Number of oxen and cattle.	Number of sheep.	Number of swine.	Value of animals slaughtered and sold for slaugh- ter.
Dawson	4,369	37,939	103,263	\$353,487	\$206,876	\$105,282	531	308	756	3,976	6,739	\$39,187
De Kalb	10,014	40,329	118,513	1,167,664	550,009	268,893	753	616	3,541	2,302	6,702	68,270
Dooley	9,790	56,852	128,573	834,193	530,903	255,634	657	856	5,493	5,992	10,104	1,008
Emanuel	6,134	41,528	423,636	347,532	438,143	393,924	1,094	256	15,170	14,988	15,464	66,685
Floyd	17,230	76,417	161,259	2,418,453	975,438	418,160	1,085	1,112	6,917	3,854	11,879	72,510
Fulton	33,446	26,711	42,096	1,070,587	489,032	500,587	414	716	2,915	737	6,177	50,356
Glenn	6,644	26,042	119,057	262,042	323,688	183,368	764	214	5,291	4,461	10,701	68,648
Gordon	9,268	49,337	136,034	1,557,538	576,618	214,235	636	518	3,416	6,056	7,958	74,824
Gwyn	5,376	12,936	63,839	273,954	116,009	42,982	105	66	2,540	2,277	7,780	.....
Greene	12,454	51,789	130,157	1,103,755	763,855	215,700	829	903	4,035	2,240	5,100	63,410
Hancock	11,317	78,841	144,277	1,138,525	1,163,398	986,956	656	878	4,604	1,634	5,893	36,656
Haralson	4,004	18,845	79,410	300,677	297,792	105,079	354	237	2,311	1,992	5,456	59,773
Henry	10,102	62,551	121,053	1,107,481	992,821	309,849	834	1,125	4,791	3,825	7,648	72,069
Houston	20,406	154,423	142,255	2,664,107	2,050,743	669,000	257	2,730	5,392	9,977	10,953	88,560
Irwinn	1,837	8,143	119,856	82,359	114,417	116,794	834	76	9,021	7,372	7,458	68,838
Jasper	10,439	57,371	193,236	984,344	894,708	78,767	977	1,091	4,529	1,885	8,196	33,678
Johnson	20,443	83,820	207,149	136,737	236,025	331,809	374	1,301	3,730	1,250	4,571	38,399
Jones	9,436	43,183	247,862	902,595	630,538	315,253	1,077	586	9,300	8,502	6,603	47,675
Laurens	7,681	67,693	377,394	740,249	538,291	339,539	251	244	15,333	3,073	14,808	41,697
Lumpkin	5,166	19,803	75,295	321,375	188,527	100,416	325	244	2,254	2,383	5,293	31,902
McIntosh	4,491	15,193	73,493	476,967	430,492	95,235	188	98	4,855	684	4,449	9,971
Milton	4,264	33,945	39,733	428,123	185,937	126,335	437	347	2,291	1,921	4,398	29,957
Monroe	17,213	75,219	188,168	1,786,704	1,383,147	489,582	1,041	769	6,247	1,754	11,018	112,869
Morgan	10,696	41,626	109,734	635,292	630,271	210,568	636	721	3,119	3,363	3,762	42,951
Montgomery	3,586	20,064	278,167	279,394	234,103	240,707	598	186	12,561	9,853	9,246	54,009
Murray	6,500	34,862	89,246	834,178	326,853	141,196	659	252	2,789	3,025	5,454	87,300
Newton	14,615	123,651	93,187	1,403,048	994,082	351,001	968	1,112	4,718	3,602	7,704	54,321
Paidung	7,893	33,734	71,838	535,125	437,568	169,423	543	379	3,412	2,882	6,990	55,654
Polk	88,905	38,902	50,431	927,545	411,200	168,819	463	414	2,000	1,916	4,407	104,633
Pulaski	11,940	68,502	183,906	637,939	1,096,775	269,337	855	940	9,098	6,707	12,798	153,639
Putnam	10,461	45,639	142,080	1,141,040	955,720	298,323	464	1,100	4,256	1,588	4,346	59,821
Tallapoosa	4,860	19,958	432,589	223,612	216,707	312,804	689	130	13,705	12,030	7,420	47,847
Telfair	3,245	21,300	232,822	178,618	275,286	199,772	497	700	9,509	8,794	7,477	44,845
Twiggs	11,048	127,428	177,369	701,645	781,629	242,989	473	1,046	3,755	4,219	6,991	50,701
Union	50,468	50,468	137,895	528,117	637,535	286,035	1,388	753	3,791	4,239	9,555	129,615
Wayne	2,177	6,804	153,853	68,313	57,760	47,760	355	325	7,160	4,360	4,905	20,926
Whitfield	4,602	4,602	1,014,644	1,014,644	426,130	223,622	274	325	4,360	7,439	7,439	61,473

Appling	5,086	19,906	337,041	159,571	950,508	972,275	536	129	16,795	8,338	14,906	48,964
Baldwin	10,618	47,138	52,730	438,420	638,018	140,903	332	560	1,844	4,971	2,904	33,948
Barlow	16,566	79,309	171,998	2,029,065	833,200	343,414	1,045	974	4,234	4,100	11,794	88,419
Bibb	21,253	35,705	100,199	1,451,130	1,045,633	249,587	342	1,008	3,091	1,260	4,103	59,341
Butts	6,941	71,727	43,451	650,196	584,640	216,366	601	580	3,685	1,568	6,223	63,530
Camden	4,615	10,332	122,688	311,138	280,173	137,076	226	124	6,755	3,585	8,732	22,396
Charlton	6,902	41,286	94,837	809,932	317,035	173,671	803	525	2,904	3,623	9,423	64,833
Chattooga	10,399	53,382	120,679	733,942	391,611	182,796	725	591	4,292	4,715	9,423	67,808
Cherokee	13,814	54,438	105,488	1,300,360	811,810	344,750	893	799	4,819	2,842	10,897	106,983
Cobb	3,192	11,669	226,065	126,474	190,580	221,671	403	157	14,309	16,036	12,779	44,139
Coffee												
Total	444,530	2,359,362	6,969,463	38,476,627	27,692,923	11,511,801	30,425	29,886	281,779	187,435	379,503	2,616,337

TABLE I.—Counties in Georgia and contiguous to the Etowah and Ocmulgee Rivers, &c.—Continued.

Counties.	Bushels of wheat.	Bushels of Indian corn.	Bushels of oats.	Pounds of tobacco.	Bales of cotton.	Pounds of wool.	Bushels of sweet potatoes.	Bushels of Irish potatoes.	Tons of hay.	Bushels of peas and beans.	Pounds of butter.	Gallons of cane molasses.	Gallons of sorghum molasses.
Dawson	23,313	102,066	4,824	11,845	19,690	6,576	7,705	1,441		97	27,715		5,779
De Kalb	27,685	156,125	14,922	1,230	1,709	6,906	10,928	860		337	25,896		10,240
Dooly	922	149,987	9,485		4,132	16,593	20,881	9		836		16,349	
Emmanuel	975	103,705	21,399	2,540	1,376	35,773	24,353	495		7,580	15,057	7,153	
Floyd	96,464	245,091	43,229	140	3,182	7,451	14,249	6,503	515	863	130,314	530	15,954
Fulton	24,604	134,996	10,207	15	866	1,315	13,598	10,002	20	1,294	43,854		2,26
Glenn	8,163	169,099	12,333	19,481	2	12,045	13,546	8,396	94	1,768	67,138	5,349	10,323
Gordon	96,181	233,785	15,827	10,221	354	6,536	11,214	2,261	637	221	80,316		7,493
Gwyn	15,389	15,389	15,827		167	353	6,774	49		214	5,349	1,480	
Greene	24,651	132,635	9,735		5,699	2,871	13,971	662	43	444	63,020		75
Hancock	8,078	141,630	17,794		9,624	4,963	26,404	70		6,475	87,259		5,002
Harrison	17,780	186,352	17,209		4,388	4,636	6,772	1,369		865	49,947		2,979
Henry	45,483	166,210	16,619	4,581	4,888	5,596	22,714	338		210	52,175	110	
Houston	2,586	363,895	7,450		3,819	40,107	40	40		2	27,530	8,874	
Irwins	65	27,875	15,165		153	16,510	23,220		7	1,962	2,671		251
Jasper	22,274	185,870	11,077	2,209	5,937	3,002	15,543	2,341		3	249		
Johnson	47,329					3,446	7,168	748		1,249	79,099	311	
Jones	203	108,945	6,815		5,188	1,408	14,354	1,239	501	3,239	14,669	2,115	835
Laurens	6,193	175,298	6,986		4,303	22,728	18,229	1,439		9,240	9,979	34,626	
Liberty	131,845	58,098	58,098		5,917	5,917	95,325	1,407		23,012	15,930		4,822
Lumpkin	82,013	25,331	2,225	12,297	2,090	5,083	7,620	2,993	10	338	39,072	5,019	
McIntosh	23,618	2,225	2,225		403	776	26,438	634		3,112	7,606		9,759
Milton	93,095	15,331	21,266		215	3,048	9,015	762		161	23,126		766
Monroe	36,917	241,251	21,331	258	10,434	2,819	35,188	161		2,849	68,692		
Morgan	19,820	129,948	14,335		4,868	3,121	8,019	4,169	3	304	38,968	5,309	
Montgomery	70,405	15,838	15,838		391	21,353	11,437		4	426	10,261		10,050
Murray	151,296	11,123	11,123	7,618	298	2,810	5,540	1,813		360	40,851		1,512
Newton	38,414	192,667	31,974		5,770	5,871	23,445	1,544		329	67,455		7,450
Paulding	29,779	163,133	12,887	1,238	1,322	3,846	12,974	2,402	347	1,769	57,995		7,470
Polk	45,497	126,750	23,410	60	2,001	3,774	4,898	2,075		346	36,320	8,439	
Pulaski	293	151,375	13,646	80	6,617	15,444	20,432	3,344		7,669	29,047	150	
Punam	160,661	7,872	7,872	100	7,326	3,328	14,848	2,497	219	1,512	13,196		
Tallapoosa	74,684	28,117	28,117		314	23,834	25,386	3,325		1,215	13,978	12,839	
Telfair	62,429	15,830	15,830	627	704	19,929	20,569	2,193		566	13,725		
Twiggs	164,145	34,032	34,032		6,169	2,051	18,163	60		6,110	19,858		
Walton	46,772	178,553	19,397	236	3,536	6,816	20,365	2,193		873	81,219	4,661	
Wayne		19,397	7,092		9	7,211	10,563	153		450	6,042		
Whitfield	48,869	135,007	33,130	9,673	10		10,563	3,851	763	133	97,510		9,411

Apples.....	2,553	63,063	39,508	935	152	20,870	38,106	944	1,699	13,106	13,509	.....
Baldwin.....	136,647	83,837	1,335	.....	4,036	1,923	13,285	759	3,895	19,330	13,184	.....
Bartow.....	1,060	239,197	36,284	350	2,833	7,633	9,045	8,093	489	72,925	.....	331
Bibb.....	23,425	148,660	4,310	.....	6,693	564	46,075	460	15,610	42,460	.....	10,311
Bulls.....	58,307	126,339	.....	80	2,926	2,407	19,380	3,546	1,974	55,395	677	.....
Camden.....	59,064	.....	456	155	145	659	19,187	562	1,930	10,955	594	.....
Charlotta.....	58,296	145,403	17,802	735	901	5,831	16,786	3,021	404	38,179	8,766	.....
Cherokee.....	.....	163,529	22,786	18,497	347	7,882	11,911	1,034	205	53,797	.....	10,991
Cobb.....	.....	215,522	23,182	382	1,972	4,159	20,351	2,296	2,523	130,650	.....	11,267
Coffee.....	.....	49,022	19,949	397	261	42,366	45,986	39	1,988	6,116	12,231	11,478
Total.....	1,107,430	6,426,927	752,399	105,945	145,711	395,053	958,104	83,398	667,283	1,896,642	153,267	156,285

RECAPITULATION.

Counties.	Population.	Farms—acres im- proved.	Farms—acres un- improved.	Cash value of farms and farm implements.	Estimated value of farm products.	Value of live- stock.	Number of horses.	Number of mules.	Number of oxen and cattle.	Number of sheep.	Number of swine.	Value of animals slaughtered and sold for slaugh- ter.
Products of counties on Tennessee River and tribu- taries.....	1,036,065	6,014,733	12,472,685	\$161,426,055	\$63,843,548	\$43,220,244	199,819	131,023	598,795	770,500	1,450,376	\$13,200,559
Products of counties on Coosa River and tributaries.	465,583	2,135,054	4,285,626	33,207,680	31,900,474	11,653,053	28,983	38,717	106,086	85,738	265,676	1,601,222
Products of counties on Etowah and Ocmulgee Rivers and on canal route.	444,530	2,359,362	6,969,463	38,476,627	27,692,923	11,511,801	30,425	29,886	281,779	187,435	979,503	2,616,337
Grand total	1,966,178	14,509,149	23,727,774	233,110,302	123,436,945	66,385,098	257,227	199,626	986,665	1,043,673	2,095,775	17,418,118

Counties.	Bushels of wheat.	Bushels of Indian corn.	Bushels of oats.	Pounds of tobacco co.	Bales of cotton.	Pounds of wool.	Bushels of sweet potatoes.	Bushels of Irish potatoes.	Tons of hay.	Bushels of peas and beans.	Pounds of butter.	Gallons of cane molasses.	Gallons of sor- ghum molasses.
Products of counties on Tennessee River and tribu- taries.....	16,139,811	30,557,872	3,834,615	30,226,045	95,941	1,360,130	854,897	873,633	105,670	177,153	8,551,422	3,325	1,300,796
Products of counties on Coosa River and tributaries.	558,446	7,276,200	380,536	57,594	215,378	140,013	798,618	46,050	4,668	51,124	1,384,167	29,696	87,018
Products of counties on Etowah and Ocmulgee Rivers and on canal route.	1,107,430	6,426,927	752,399	105,945	145,711	395,053	958,104	83,398	4,713	667,283	1,896,642	183,267	156,295
Grand total	17,805,687	44,260,999	4,967,550	30,399,584	457,030	1,895,196	2,611,619	1,005,101	115,051	895,560	11,832,231	186,218	1,544,099

I will now state to the committee that in discussing this question I shall leave the details of the physical features of the work more to the United States engineer who made the survey, and I shall confine myself to the effect which it will have upon the trade and interest of the Southern States and of the rest of the Union, so far as this work is concerned—its importance to the country at large.

By Mr. NORWOOD :

Question. You will not present the geography and topography of the whole line ?

Answer. No, sir ; the engineer will be here himself, and I think he can do it much more satisfactorily than I.

The question of transportation is of such vast importance to the whole country that I deem it unnecessary to apologize for trespassing on your time. In this question will be found the solution of the grand problem of commercial prosperity—a problem of such vital importance that it has not only impressed itself upon the public mind, but claims the first and most earnest care of the legislator and statesman. I think we hazard nothing at the outstart in accepting the fact that water affords the cheapest means for moving the heavy products of the commercial world. Experiments upon this point have been so well attested that to doubt would be the enactment of the folly of doubting one's own senses ; and I am satisfied that there will be no difficulty in proving that transportation by water is not an exploded idea ; that canals have not fallen into disuse or become obsolete ; but, on the contrary, that their multiplication is to-day the great need of the country, and the main hope for present and future prosperity.

It is true that for a time the slow, plodding canal-boat was in a measure obscured by its more pretentious rival, the railroad. But experience teaches that that plodding boat, whose unpretentious movements along the Erie Canal scarce attracts anything better from the passer-by than a sneer, carries more freight than the longest railroad train, and is in reality doing more for the advancement of the great industries of the country than all the trunk-lines from the Saint Lawrence to the Potomac.

If it be true that "one well-attested experiment is worth ten thousand untried theories," we have the experiment here, and the result also ; and the great change which the public mind is undergoing on this subject attests the fact that it has not viewed these results with indifference.

If there is any part of the world that could discard canals and rely solely upon railroads, it would be the British islands and France, because they are surrounded by water, and from the interior to a sea-port is comparatively a very short distance. But yet we find an aggregate of about twelve thousand miles of canal and improved navigation in these two kingdoms, whose territory combined does not greatly exceed that of the four cotton States of the Atlantic sea-board. Yet all these canals find profitable employment, and more extensive works of the kind are contemplated, when in England it is said no acre of land is now distant more than fifteen miles from navigable water.

The canals of China and Holland are historical, while the recent connection of the Danube and the Rhine by canal has transferred the grainery of western Europe from the United States to the Russian Black Sea provinces. This fact presents a serious matter for our consideration, and furnishes the reason why the foreign grain trade of this country has so suddenly and so disastrously fallen off.

A very persistent effort has been made to impress the public with the

idea that railroads have superseded all other kinds of transportation. This for a time had its effect. But experience has dissipated the fallacy, and we are again coming back to the truth.

The failure of some few canals which were badly planned, illy constructed, or abandoned before completion, has been seized upon and trumpeted over the land as evidence that the system is inadequate, and this has furnished the text for those Atlantic sea-ports where nature renders water communication with the West impossible.

No efforts have been spared to make converts to these groundless assertions. If, however, we take the failures of railroads as financial operations—and that is possibly the true test—we find the per cent. exceeds that of canals, and this fact anybody can ascertain who takes the trouble to inquire.

Another argument against water lines is, that since the introduction of railroads the navigation of many rivers, and especially in the South, has been abandoned. This is true and the cause palpable. The export of the South is almost exclusively cotton. This is in most cases raised upon borrowed capital, in the form of provisions and commercial manures, upon which the producer pays an average of about $2\frac{1}{2}$ per cent. a month. The cotton-belt is near the sea-board, making the difference between the two modes of transportation small, and especially when compared with the $2\frac{1}{2}$ per cent. interest; consequently the producer hurries his crop to market by the speediest mode, and this takes the major portion of the cotton out of the country in a month or so. To navigate these rivers successfully, boats must be built for the purpose; and these boats, after the cotton-crop is removed, would be without any kind of employment whatever. Had we the canal, however, the light-draught vessels used upon it could ply upon our rivers, move the crops, distribute supplies, and do the carrying at infinitely less cost than now, returning to their regular trade on the canal when their services were no longer needed.

Hence you see that it is possible, with a great many miles of navigable water, for us to be reduced to the most costly mode of transportation, if we except the common road-wagon. And this will furnish the reason why we pay from one to two dollars a bushel for corn and \$12 a barrel for flour when corn is burned in Iowa for fuel and thousands of bushels of wheat remain wasting in that and other States, because it cannot find a way sufficiently cheap to market. This is why we import iron while our hills abound with the ore. It costs too much to get the food to the ore and the product of the ore away from the mines. We suffer, and the West suffers with us.

Four of the cotton States plant six millions of acres in food-crops; employ half their labor and capital in cultivating corn and wheat. This deprives the West of a market for fifty millions of bushels of grain, which is left worthless upon the hands of the producer.

At the same time it enhances the price of cotton, imposing additional hardship upon the agricultural laborer, whose scanty earnings will scarce permit him at present prices to indulge in the luxury of a shirt; and all this due to the fact that we have no means for the interchange of our respective products cheaply.

It is true we have railroads, and have had them for a great many years, but the fact still stares us in the face that although our sea-ports are less than one thousand miles from the great center of trade, Saint Louis, and a great deal nearer than New York is, still not one dollar's worth of foreign goods finds its way from Savannah to Saint Louis,

nor does a single bushel of grain pass out of the country in that direction.

Now, it may be asked, why does all the western grain go to New York for export? And why does the West import through New York? Why is it that the circuitous route by the lakes drains the Mississippi itself of its trade? Why do we import iron? Why does the South plant millions of acres in corn, and raise that product at an average cost of 94 cents per bushel, while cotton was worth 20 cents per pound, and corn in Missouri and Iowa some 10 cents per bushel? Why is it that New York City has become the commercial center of the western continent? Why is it that portion of the Northwest along the great lakes has developed so rapidly that it has become the wonder of the world? That all that portion even beyond the Mississippi which finds an outlet through the lakes should have outstripped all that other portion south of the latitude of the Ohio?

There is a reason for this, and the true reason is very different from the one usually assigned for it. Some say that the growth of New York is due to its harbor. Such a reason can only excite a smile with those who reflect that there are many harbors in the world just as good as New York harbor, but which have never built cities, because it requires something beside a harbor to do that. On the contrary we have a notable example at hand. The mouth of the Mississippi is so obstructed by mud and sand-bars that it is no unusual thing for a vessel to stick fast for days, unable to get in or out, and yet New Orleans for years controlled, in value, the major portion of the export and import trade of the country.

Another class, who profess to be highly scientific, have a great deal to say about natural channels of commerce and emigration, and certain parallels of latitude along which they flow just as water runs down hill. This may be all very well, but it does not satisfy the minds of practical men. They want something more reconcilable with the dictates of common sense. They know that there are no natural channels of either trade or emigration any more than there are natural railroads, or ships, or steamboats.

Trade goes where it can be made most profitable and the emigrant where he can find the best home and the largest remuneration for his labor. The trade and the emigrant both seek the West, and go by that route which will take them cheapest; or else why don't they land at Halifax, or Portland, or Boston, instead of passing by these places and going to New York? The answer may be summed up in two words, "cheap transportation," and this furnishes the key to the mystery.

Experience establishes the fact that the ordinary road-wagon is the most expensive mode of transportation in common use; the next railroads, while water is the cheapest, although it is, perhaps, a little more difficult to get at the precise difference of cost between them. The late Commodore Matthew F. Maury gives the difference as follows: Railroad transportation, 500 per cent. cheaper than by wagon; by free canal, 600 per cent. cheaper than by railroad; and river, 750 per cent. cheaper than rail, and this estimate is based upon an actual comparison between lines operated in different parts of the country.

Recent experiments on the Erie Canal show that a ton of freight can be carried over that line in the old horse-boats at $5\frac{1}{2}$ mills per mile, including the State-tolls. The same authority* states that it is *possible*, under the most favorable circumstances, to transport a ton of freight over a road like the New York Central, with grades not exceeding 20

* Report Board Special Commissioners, 1872.

feet per mile, for $9\frac{1}{2}$ mills per ton. This still leaves a difference of nearly 100 per cent. in favor of the canal; but when we bear in mind the many conditions involved in this reduction of railroad freights to $9\frac{1}{2}$ mills, we will be satisfied that the actual per cent. of difference must be still greater. But the same experiments demonstrate the feasibility of using steam as a motive-power on canals, and the first application on the Erie Canal has resulted in a reduction of 65 per cent. on the present cost of transportation, making the actual difference between the canal and this railroad possibility something over 400 per cent.

Competition cannot alter these figures, nor can legislative enactments change them. They must remain as now until some mode of operating railroads at less expense be found. And this would no doubt apply to canals also.

The people of the West understand this question of water transportation very well, and the people of the South are beginning to wake up to the fact that the development of their great interests requires a freer intercourse with their brethren of the West. Now the question of accomplishing this presents itself. We have railroads between the sections, and yet the people of Iowa burn their corn, while the coal and iron and manufacturing interests of this State suffer for lack of cheaper food. Is anybody prepared to say, with these facts before them, that our present system is adequate to our wants? That we should be content to pay \$1 for 10 or 15 cents' worth of corn? Or that the western farmer should be satisfied, out of \$1 paid for a bushel of corn, with 10 cents as the reward of his labor? For fifty years or more the attention of the West, and indeed of all thinking men, has been turned to this subject, and a feasible route for an unobstructed canal sought for from our northern frontier to the southern boundary of Virginia. These surveys have had no practical result as yet, except the Erie Canal, and to this work I will briefly refer, if only to show that, frozen as it is five months in the year, and operated the other seven months by the slow process of horse-power, it yet competes successfully with every great trunk-line railroad north of the Potomac, and as a freight-carrier is superior to them all. The canal is three hundred and sixty-three miles long and cost \$38,977,831.16, including improvements and enlargements. In 1862 the whole sum expended upon this work, with interest, amounted to \$52,491,915.74, while the gross receipts from tolls during the same period (about thirty years) amounted to \$71,783,676.65. Deducting expenses, \$12,518,860.03, there remained a net profit of \$59,264,812.62, a sum sufficient to pay the entire cost of construction, with interest, and leave a balance of nearly \$7,000,000. Since then the earnings of the canal have been about \$40,000,000 more. It appears from the report of the State engineer that but little more than one-sixth of the gross earnings was required to pay all expenses, while the balance, or five-sixths, was net gain, and this included the period when the canal was in an unfinished condition, when the cost of repairs was greater and the receipts less.

We have glanced at the canal as a mere investment; now let us see what it has contributed to the great interests of the country. In 1820 the exports of New York amounted to \$11,769,511; Philadelphia, \$5,743,549. The population of New York was 123,706; Philadelphia, 137,097. In 1830, five years after the opening of the Erie Canal, the imports of New York amounted to \$38,556,064; Philadelphia, \$9,525,893; the exports of New York to \$17,666,624; Philadelphia, \$4,291,793. The population of New York had increased to 203,007, Philadelphia to 186,961. In 1840 New York imported \$60,000,000; Philadelphia, \$8,000,000. New

York exported \$32,000,000; Philadelphia, \$6,000,000. The population of New York was 312,712; Philadelphia, 258,832. In 1850 New York imported \$116,000,000; Philadelphia, \$12,000,000. New York exported \$47,000,000; Philadelphia, \$4,000,000. The population of New York was 515,304; Philadelphia, 409,353. In 1871 New York imported \$357,909,000; Philadelphia, \$17,728,000. New York exported \$282,530,000; Philadelphia, \$17,903,000. The amount exported by New York included about two-thirds of all the breadstuffs sent abroad, and this the product of the West. The increased export of Philadelphia consisted principally of coal-oil, which found its nearest market in that city.

It would be very difficult to account for this wonderful difference of increase if we had not the report of the New York canals at hand, which shows that the tolls on the Erie Canal increased during the period specified from \$5,424, the first year, to \$4,246,563 in 1868. In 1837 the value of tonnage passing through the canal was \$55,809,288; in 1868 it was \$305,301,929, an increase of nearly 600 per cent. From the same reports we learn that the canal annually transports 40 per cent. more of freight in tons than the Erie and Central Railroads combined, and these roads comprise to a very great extent the railroad system of the State.

I do not think that anybody with these facts before them will deny that the prosperity of New York is, in a great measure, due to the Erie Canal. And especially when we remember that had the trade which sought New York over the Erie Canal in 1869, for instance, gone by rail to Philadelphia, its transportation would have cost the producer about \$46,000,000, instead of \$7,666,000. Nor has its effect upon the whole country tributary to the great lakes been less marked. In twenty years, according to the report of the Superintendent of the Census, the production of grain in the eight great food-producing States has been increased fourfold; the number of acres cultivated has been doubled in ten years, and the price of produce in some instances quadrupled; and all this wonderful development the result of cheap transportation due to the construction of the Erie Canal.

Before the opening of this canal it cost \$100 to carry a ton of freight from Buffalo to New York. This was equal to four bushels of corn or two bushels of wheat to take one bushel to market. The opening of the canal at once reduced freight to \$10 per ton, and this has since been reduced to \$3 per ton, so that everybody who was so fortunate as to live within reach of this canal at once realized about \$97 additional upon every ton of produce shipped to market. Is it necessary for me to give any other reason for the wonderful prosperity of this section? And here upon the ground where canals have been in use longest we find their importance best appreciated and constant demands made for the construction of others.

There is one other argument against canals, to which I will briefly allude, and that is "In this fast age they are too slow." "The age will not tolerate that which is slow;" and hence corn, and bacon, and lime, and coal, and iron, and lumber, must be moved "at lightning speed" or else the interests of trade will suffer. This, I think, is about the gist of the argument. Now we ask, why? We can conceive that articles of a perishable nature would seek quick transportation, and that the traveling public would do likewise. That the trader would send his costly goods, those of great value and of little bulk, by express. He would do that to save interest, an item of importance in such cases. But why he should ship corn, and things of a like nature, bulky and

of little value, by express is not so clear. Let us inquire a little. The principal object obtained by quick transit is time, and time here represents the interest on the money invested in the article to be moved. Now let us make a practical application of this. The average time consumed by horse-boats, heavily freighted, between Buffalo and Troy is ten days; the time of through-freight trains on the New York Central Railroad, two days. The cost of moving a ton of freight between these points by canal is \$1.98, including State tolls; by railroad, \$4.86. Hence you see that to save eight days in the transit of a bushel of corn the farmer would have to pay about 9 cents more than he would by canal, or at the rate of $32\frac{1}{2}$ per cent. a month for this small saving of time. Can anybody tell what compensating advantage either the farmer or merchant would receive in such a transaction? And yet such arguments pass current when an application of common sense would at once reduce them to an absurdity. Recent experiments demonstrate that steam can be profitably used on canals, and that by it transportation will be reduced to less than half what it is now. A boat propelled by steam has passed through the Erie Canal in four days with a full cargo. And it is not improbable that this time may be improved hereafter. This will deprive the enemies of cheap transportation of one of their pet arguments, but they will, no doubt, manifest their usual ingenuity in finding others. That the *people* of the country are in earnest upon this question is manifested by their persistent demand for aid to several routes between the great producing sections.

I do not care to discuss any of these projects; what I have said in relation to one is applicable in a greater or less degree to them all. There is one, however, which is of great importance, not only to the West, but to the New England States also, and, as a defensive measure, to the whole country. I refer to the Niagara Ship-Canal. This work will give to the upper lakes an outlet without a transfer of freight, making a great saving to the shipper. There are employed on these lakes vessels carrying 661,336 tons, nearly one-fourth of the entire tonnage of the country, including river steamers, and equal to about one-third of the tonnage employed in our ocean traffic. These vessels for six months of the year are frozen up, their crews idle, and the vessels, themselves, not only unprofitable, but exposed to serious injury from ice. These losses must be made up by extra freight charges during the season of navigation. This canal will release these vessels from their periodical confinement, and enable them to seek employment elsewhere when the lakes are closed by frost and ice.

Much has been said about the inadequacy of this route in times of peace, and its dangers in time of war. All this is true, and if such arguments are used to show the impolicy of trusting to this single route between East and West, I agree fully with the man who uses it. But at the same time everybody must admit that, if the Erie Canal was closed for one single year, it would produce a blockade of trade, and result in general disaster. Its being closed for a few months is seriously felt, and this shows the absolute necessity of the work, and the importance of opening such a connection between the lakes as will give to Chicago a free and easy access to the sea. But, at the same time that these improvements are essential to that portion of the country, I think we can show that it does not by any means supersede the necessity of other lines of canal, further south.

I have not referred to the Chesapeake and Ohio Canal, nor to the Pennsylvania canals, because they have as yet failed to form a continuous water connection with the navigable rivers of the West. But they

have contributed largely to the development of the sections through which they pass, and especially the iron and mining interests. That they can carry coal cheaper than railroads is evidenced by the fact that the Reading Road has leased the Susquehanna Canal with the avowed purpose of using it to transport coal cheaper than the road can do it.

The same is true of iron, also. The coal and iron interests of Pennsylvania make her to-day the wealthiest and most prosperous State of the Union. Georgia, and Tennessee, and Alabama possess vast mines of coal and iron, richer in quality and quantity than any other mines upon this continent, and yet they remain undeveloped, and as useless as "the hidden talent," only because we have not the cheap means of transportation which will enable us to bear this product to a profitable market. In this view the canals of Pennsylvania have not proved a failure, nor have they fallen into disuse, as is asserted by those who use them as an argument against our great proposed national lines.

At the first glance one would suppose the Mississippi River would answer every requirement of western trade. But it does not, as the people of the West very well know.

If anybody has a doubt upon this point he has only to turn to the last report from the Bureau of Commerce and Navigation to set it at rest.

In 1871 there were exported from New Orleans five hundred and eight thousand bushels of corn, \$1,075,000 worth of flour, and twelve thousand five hundred and ten bushels of wheat, while during the same period New York exported more than \$35,000,000 worth, and this the product of States drained by the waters of the Mississippi.

Last winter, I saw it stated in the New York papers that ten millions of produce had been caught on the Erie Canal by one night's freeze. This was mostly western grain, and in amount greater than the grain export of New Orleans and Philadelphia combined.

You may ask, why does this grain go away from the Mississippi, and seek New York? I do not know any better reason than that it is cheaper to send it by way of New York, and that is reason enough. I know that the common reason given why the trade of the country seeks New York is because New York has more capital than any other American sea-port. But money or capital is only a convenient medium of exchange, and is attracted by the product, which is the real value. Nor has it any more power to draw the product to it than the eagle has to draw the carcass. Money gathers at New York because the products are there, and the products go to that point because it is cheaper to carry them there than to other places. The memorial adopted by the Louisville convention, October 4, 1870, gives \$11.77½ as the cost of carrying a ton of freight from Saint Louis to Liverpool, by way of Chicago, the lakes, the Erie Canal, and New York. The same authority gives the cost by way of New Orleans and the Gulf at \$12.91, being \$1.13½ in favor of the New York route. High insurance, caused by the dangers of the Florida Pass, and heavy loss from climatic causes, are urged as reasons why western trade no longer seeks this route. But the first reason is sufficient. *It costs more.*

It is idle to urge in opposition to the proposed routes that the waters of the Mississippi and Gulf are ample to bear away all the products of the West which the Erie Canal and the great railroads cannot move. If they are competent to the task, they do not perform it, and that for the reason assigned or some other reason equally as potent.

I say nothing against the Mississippi River and its proper uses. It should be, and in time will be, improved from its head-waters to the

Gulf of Mexico. But I do say that neither the Mississippi nor the lakes do or can supply the needs of the whole country.

Look at the map and you will see a vast area of country bounded on the one hand by the lakes and on the other by the Mississippi. This section is divided by the Appalachian range, which runs nearly parallel with the sea-shore, separating the waters which fall into the Gulf of Mexico from those which flow into the Atlantic Ocean. In fact this range separates the food-producing section from the region of minerals and cotton and other products. Four States of this section on the southeast Atlantic sea-board we find require some fifty millions of grain alone to supply their present need.

And yet those who argue that the lake route or the Mississippi route is sufficient, simply declare that all this produce needed for home consumption must be shipped by these circuitous routes to New York or to New Orleans, there transshipped to some point on the coast of the Carolinas, Georgia, Florida, Alabama, or Mississippi, to be sent into the interior by railroad for distribution. If there were no routes like the Atlantic and Great Western Canal penetrating through the heart of the region to be supplied, and connecting directly with every navigable stream in all these States, their proposition might answer.

But in the face of this great proposed work, and especially as an argument against its construction, the thing is so absurd that I deem it due to the committee to offer an apology for consuming their time with this notice of it. What we need is cheap food, and this can only be obtained by bringing it over the shortest route, without transshipment, and carrying it, if possible, in the vessel in which it is first shipped, to the door of the consumer.

There are more than five thousand miles of inland navigation in the four States named, suitable with very little improvement to such vessels as will navigate this canal. This will be at once opened to western trade, giving us the very cheapest kind of transportation, and allowing such supplies as we must of necessity draw from the West, at a cost not exceeding $2\frac{1}{2}$ mills per ton a mile.

The barrier presented by the Appalachian chain is a very good reason why for a time the construction of canals was abandoned. Certain physical features are necessary for the construction of such works, while railroads can be built almost anywhere.

Then it was urged that railroads could be built cheaper, and it was *hoped* could be ultimately operated cheaper. But experience has not verified the latter. The whole country consequently abandoned the channels which nature had supplied, and went into the railroad business; all except New York. And I point to her as an answer to any argument that may be put forth against canals.

It has been asserted that if the Erie Canal had not been built until the present day, it never would have been built at all. That is very likely. For had the canal not been built the trade would have sought some other outlet, and New York City and State would have been to-day as poor as any of us. She never could have built her four thousand five hundred miles of railroad, nor could her Central Railroad have earned in one year a sum nearly \$10,000,000 greater than the original cost of its construction.

And here I wish to call attention to the fact that the great prosperity which this country enjoyed between 1830 and 1850 was not entirely the result of our extensive railroad system. The policy of England in the enactment of her celebrated corn-laws, the closing up of the Black Sea, and the consequent cutting off the grain trade of Russia from Western

Europe had more to do with it than is usually admitted. It is true that the high price of breadstuffs enabled the people of the West to use every means of transport to the sea-board, and with profit.

But the necessities of Western Europe hastened the construction of the great Ludwig Canal, connecting the Danube and the Rhine, and so soon as that was opened into the grain-producing provinces of Russia the demand for American breadstuffs in a great measure ceased, and our foreign trade fell off to a fearful extent. The British corn-laws were repealed, her ports thrown open, and Russia became the granary of Western Europe.

In ten years the export of our domestic products has fallen off \$56,000,000. Our shipping interests have suffered to a fearful degree, our commerce has rapidly declined, and to-day, while the increased exports of England amount to \$237,000,000 a year, and those of France to \$226,000,000, our export trade has been so depleted that the balance of trade is annually against us, and Congress is asked to interpose by subsidies to prevent our commercial marine from being swept away from the ocean.

This is a grave state of affairs, and one that demands a prompt remedy. What shall that remedy be? Can our shipping interests be sustained by subsidizing steamboats to run back and forth between Europe and America without cargoes? No one will deny that if these vessels had cargoes their employment would not only sustain them, but be remunerative, and they would need no aid. Now, the question is, why don't they have cargoes? The West has food enough, and to spare, while the cry of the Old World is "bread!" The products of the one remain wasting upon the hands of the producer, while the inhabitant of the Old World perishes with hunger. The West burns corn for fuel, while the wail of starvation is wafted to us by every breeze that comes to us from the shores of the eastern continent. Will it afford the desired relief to pay ships to ply between these shores empty? Will it enhance the price of corn or increase the production of cotton? We have no lack of products now. The West alone can supply enough to employ a million of tonnage added to what we now have, but the means of getting those products to the sea-board cheaply is wanting, and there is where the trouble lies.

I think it has been demonstrated that our present outlets are not sufficient. The public verdict says that railroads alone do not meet our wants, and the experience of the past proves this beyond a doubt. For years we have had a railroad mania in the land; have rushed on from one extravagance and folly to another, until we find ourselves overburdened with debt and in possession of a system of internal improvements that never can meet our wants.

The great need of the country is other and more commodious outlets to the sea. The Northwest asks that the barrier at Niagara be cleared away, and the flood-gates of trade be opened from Chicago to the sea. The West and the South ask that the Ohio and the Chesapeake be united, the Tennessee and the Ocmulgee, and that the mouth of the Mississippi be cleared out.

The merits of all these improvement have been discussed for years past, all except that through Georgia, to which I crave your attention for a moment.

This route, as you will see by looking upon the map, begins upon the Tennessee River, near Gunter'sville. Below this point the Tennessee is, without exception, the best of all western rivers for navigation by barges or steamers of light draught, its channel being without serious

obstruction, except at the Muscle Shoals, which are being improved even now so as to admit the passage of steamers of 750 tons. At Gunter'sville the Tennessee and Coosa approach each other within thirty miles. Here it is feasible to connect these rivers by a short canal, and this will open navigation to Rome, Ga., for boats of 300 tons. From Rome the route follows the Etowah to its nearest point of approach to the Chatahoochee and Ocmulgee, and down the latter river to the sea.

Instead of discussing the physical features of this route, I respectfully refer the committee to the report of Major McFarland, who has made a careful and accurate survey of it, under the orders of the War Department.

The first question to be determined, after establishing the feasibility of a work of this kind, is the result to be accomplished by it. This result can be obtained by estimating the value of the trade likely to seek the proposed outlet; as, for instance, we see it stated that the proposed interoceanic canal across the Isthmus of Darien will probably accommodate a trade whose annual value is about \$450,000,000; and this includes the value of ships as well as cargoes. To accommodate this trade it is proposed to construct a canal costing about \$50,000,000. And it is claimed, and no doubt correctly, that it will save annually some \$49,000,000 upon the trade specified. This shows what its value will be to the trade of the two oceans; and the fact that no very desirable route has been found is perhaps the only reason why the work has not been constructed long ago.

Now I wish to draw particular attention to a comparison of what this work is expected to do, and what will be accomplished by the Atlantic and Great Western Canal. The one proposes a canal to cost \$1,000,000 per mile, for the accommodation of a trade not exceeding \$450,000,000 annually, including the value of the ships engaged in it. The other proposes to connect the Atlantic Ocean and the Mississippi River by an unbroken chain of water open at all seasons of the year, uninterrupted in peace and safe in war. This great inland sea, known as "the Mississippi and its tributaries," embraces some sixteen or seventeen thousand miles inland navigation, which controls seventeen thousand five hundred miles of railroad also. Over this aggregate of thirty-four thousand miles there is annually moved tonnage whose value exceeds \$3,500,000,000, a sum sufficient to pay our national debt and to build seventy-five canals like the one proposed.

When we remember that the object of the Atlantic and Great Western Canal is to reach this trade, and afford it a safe, certain, and cheap outlet to the sea, and that this outlet will cost but \$20,000,000, we have in our possession the strongest possible argument in favor of its construction.

But there is another powerful reason why this work should be completed with as little delay as possible. The experience of past years teaches that cotton is really the only reliable article of export in this country. Representing a specie value in all the markets of the world, a ready sale has always been found for whatever surplus we may have had, and at prices which have hitherto rendered its production a profitable pursuit.

But the fact stares us in the face that this state of things is undergoing a serious change. The profit on the production of cotton is becoming uncertain and doubtful, and we realize the fact that the United States no longer controls the market. In 1860 the product of cotton in

the United States was 5,387,052* bales. Of this amount Georgia, Florida, Alabama, and South Carolina furnished 2,109,673* bales. In 1870 the entire product of the United States was 3,011,996 bales, and of this the States just named produced 1,167,705 bales, or more than one-third. In 1860 we sold to England alone 1,115,890,608† pounds. In 1870 our entire export amounted to 1,462,928,024‡ pounds, and only some 357,000,000 pounds more than we sold in 1860 to England. But England consumed about the same amount of cotton in 1870 that she did in 1860, and I think if you will turn to the report of the Bureau of Statistics you will find how this great falling off was effected. In 1850, out of 663,576,864† pounds of cotton consumed by Great Britain, the United States furnished 493,153,112 pounds, or about 74½ per cent. In 1860 she consumed 1,390,938,720† pounds; the United States alone furnishing 1,115,890,608† pounds, against 275,048,112 pounds the product of all other countries, or 80 per cent. of the whole. In 1870 England consumed 1,336,371,648† pounds. Of this amount the United States furnished only 716,245,040 pounds, against 620,126,608 pounds furnished by other countries, or only 53 per cent. of the whole amount. So that while she consumes about the same she did in 1860, she imports only about one-half of what she needs from this country, the other half being drawn from the Indies, Brazil, and Egypt.

These figures teach us two things: first, that we do not control the cotton market, and second, that the countries just named have almost quadrupled their production of cotton in the last decade, and that it will require the stimulus of high prices but a very few years to enable them to drive our cotton out of foreign marts, just as Russia is driving out the grain trade.

With the present high prices, the average planted is decreasing, the product is diminished, the producer is gradually growing poorer and poorer year by year, and our laboring population is abandoning the cotton-belt, leaving none to supply their place.

I think there can be but one solution for all this, and that is that the production of cotton is ceasing to be profitable. People do not abandon a country where a living can be easily and certainly made, nor do they run away from prosperity.

Now, why is it that cotton is ceasing to be profitable? I do not know any better reason than that the cost of production consumes the profit. The recent resolve of the farmers and planters of this and adjacent States to plant less cotton and larger provision crops points unerringly to the cause of the trouble. That trouble has grown so great that they are willing and ready to revolutionize the entire system of planting in all this section to escape from the intolerable burden which the want of a freer intercourse with the West has imposed upon them. They see no surer prospect of relief than to plant less cotton, raise their own provisions, and keep at home a hundred millions of dollars which is now paid by them for a very small amount of provision and a very large amount of railroad freight-bills.

Nobody will question the wisdom of this policy when he reflects that the old system may at no distant day force these men to sell their birth-right for a mess of pottage, with the railroad freight added. But while, sir, I do not doubt its wisdom, so far as this section is concerned, so long as the necessity exists which drives them to it, I do not believe it will

* Census 1870, page 699.

† Agricultural Report, 1870, page 55.

‡ Bureau Statistics.

produce the best results upon other portions of the country. Take away the cotton crop out of our list of exports and we become commercially bankrupt; not only the South, but the North and West as well.

But for the large crop on hand in 1866 this result would have followed the close of the war, and for this opinion I have no less weighty authority than the Secretary of the Treasury himself. Take away the two or three hundred millions which the cotton export brings, and what becomes of our foreign trade? We may build railroads all over the continent; we may subsidize steamboats all over the ocean; but prosperity will not be restored until the means be provided, not only for getting the products of the West to the sea-board, but for a freer interchange of products between the various sections.

And just here I will call attention to the fact that a canal at the mouth of the Mississippi, or one at Niagara, or one between the Ohio and the Chesapeake, will never answer the purpose proposed by the Atlantic and Great Western Canal, viz, of furnishing a home market to the products of the West and the development of the great cotton interest of the country. It will also furnish an important outlet to the sea for the products of a very large portion of the West, but we do not claim for it that it will answer every need of the country and render all other works of a similar kind unnecessary.

I know it has been claimed by overzealous advocates that either the Mississippi on the one extreme, or the lakes and Saint Lawrence on the other, could be made to answer every need of the country; but we have only to examine the map, to see at once that such a claim is as absurd as would be that of supposing a single artery, located in the crown of the head or sole of the foot, sufficient to give perfect vigor and vitality to the human body. The value of this home trade to the food-producing sections may be conceived when we remember that a single railroad annually brings to Atlanta, and other stations along its line, western products valued at more than \$40,000,000. Add to this the amount sent to these States over other roads, and that which reaches us by way of the sea-board, and it will make an aggregate greater than that taken from us by all the peoples of the world combined.

The opening of this canal would effect an average saving on each ton of freight of \$9.52. Upon grain alone this saving would amount to the enormous sum of \$28,500,000 annually, and three times that sum if all other articles of prime necessity drawn from the West be included. The sum thus saved would equal about \$25 per head for the entire population of these four States.

It is claimed that freight can be moved on the Mississippi for 1½ mills per ton a mile. If this be so I do not see any reason why it could not be moved on the Ohio and Tennessee Rivers at the same cost, especially when all obstacles to navigation have been removed. Nearly 1,200 miles of the proposed route from Saint Louis to Savannah is by river. Over this, at the rates given, a ton of freight could be carried for \$1.50. There are on the whole line some three hundred miles of canal and improved navigation.

I think it is pretty clearly established that, by the use of steam, freight can be moved on canals at 2.068 mills per ton per mile. This would make the cost on this line some 62 cents, and the entire cost from Saint Louis to Savannah \$2.12 per ton, or 6½ cents per bushel.

Who is prepared in the face of these facts to doubt that we have the means within our reach of again grasping the grain trade of Western Europe, and the cotton market of the world?

"Now, we no doubt fully contest the wavering balance of trade with Russia in respect to her supply of wheat to Great Britain. Why? Because to bring a bushel of wheat from Chicago to the Atlantic costs us 30 cents. Russia can do it equally as cheap, including the cost of production. How can you and how can we change all this? By finding a route by the Saint Lawrence or by any other channel, by which grain can reach the sea-board for 15 cents a bushel. Do this, and Russia no longer can hold dispute in the markets of the world."

The report of the engineer establishes the fact that by horse-boat a ton of freight can be carried over this route from Saint Louis to the sea for \$4.88, or 14 cents per bushel, and 1 cent less than the limit given above.

Passing, as the Atlantic and Great Western Canal will do, through the great cotton-belt, and giving to all that section, by means of its connection with the inland navigation already supplied by nature, cheap food and easy access, it will not only furnish an immense and annually increasing home-market for the products of the West, but will also enable us to supply the world with cotton so cheap that it can never have a successful competitor.

There is one other question connected with this subject which it is eminently proper for me to discuss here, and that is the manner in which this work shall be built. In 1869 the legislature of Georgia granted a charter to a number of gentlemen, many of whom are citizens of this State, and all well known to the country. This charter makes the canal forever a public highway, free to all who may choose to use it, upon the payment of a small fixed toll, whose maximum shall in no case exceed five mills per ton. This sum is designed for maintenance, repairs, interest upon investment, and other expenses, and for a sinking-fund for the final extinguishment of the debt.

The application made by the company to Congress was for the indorsement of the guaranty of the United States for the payment of interest only upon the bonds of the company, not to exceed \$80,000 per mile, and this indorsement to be granted upon each ten miles of the canal as completed, the Government holding the whole work as security for the faithful performance of this contract to pay the interest promptly.

The plan is not new. It has been fully tested by the British government in the construction of their colonial works of internal improvement, and found to work well. It possesses many evident advantages over the old system of subsidies and land-grants, leaving little room for speculation and fraud, and making the company alone responsible for loss as from this cause. It insures that no work, if not of commercial value, or in other words a paying enterprise, will be undertaken under the provisions of such an act, as the Government becomes responsible only for the interest, while for the principal the money-lender must look for security and final payment solely to the value of the work itself. It will insure economy in the construction, as it is private and not public money that will be used, and will guard against corruption, as the parties can only defraud each other.

Canals differ from railroads essentially in this particular, the canal only is owned by the company, while the boats navigating it are owned and operated by private individuals and others. Anybody has the right to use a canal who pleases; and the tolls being fixed by statute, and the work itself declared by law a public highway, no danger from discrimination or monopoly need be apprehended. It will be "as free as the sea," or as our country roads, or streets, or public highways; for

we should not forget that everybody is taxed to keep the one in repair, while the commerce of the world is taxed to maintain navies, and light-houses, and buoys, and for other purposes deemed requisite for its safety and protection on the high seas.

The interests of corporations who serve the public are closely identified with the interests of that public; the only danger is that by the grant of irresponsible powers the corporation may some time become the master instead of the servant of the public. This state of affairs should be guarded against. But I do not apprehend there would be any more difficulty in restraining such a corporation to its proper uses and legitimate interests than in enacting laws for the restraint and guidance of Government officials who would have charge of it under State or Federal control. Because wrongs have been committed by some is no reason why an indiscriminate war should be waged against all corporations. To their energy and public spirit we are indebted to-day for the major portion of the wealth and prosperity of this country, and when grave wrongs have been permitted to grow out of them, the corporation can in most cases divide the responsibility with the law-making power whose duty it was to guard the public weal. Experience, however, is useless, if the errors of the past suggest no remedy for their correction in the future.

In presenting this plan it is proper for me to state that the principal desire of the members composing this corporation, and I believe of the State of Georgia, is to secure the construction of this great work and its benefits to our people, looking upon the manner of its construction as of minor consideration, and being entirely willing to leave the arrangement of that to the committee and to Congress.

The materials for the development of a prosperity in this country, more dazzling than a dream, have been provided by a wisdom which puny-minded man is slow to comprehend. One section, where the relation borne by the value of food to the value of labor is so intimate as to make both almost valueless, is choked and gorged by the surfeit of grain, whereas other sections engaged in the manufacture of those articles required by the diversity of climate and pursuit are hampered for the want of a cheaper interchange of the commodities of other sections, an interchange so absolutely necessary to the prosperity of all.

Cotton is not king, nor is iron, nor grain, nor manufactures. They are all subjects; powerful subjects, it is true, but all subordinate to the dominant power of the land—the real king—transportation.

Hat in hand, we see these powerful subjects humbly supplicating King Transportation to place them in more intimate relation, and effect for them an alliance irresistible in the onward march of progress.

We hear Transportation say to Cotton, "Bend your energies to the increase of your production, while I bring you iron, food, and manufactured articles from the allied powers." We hear Transportation say to Grain, "Here is money sent you by cotton, iron, and manufactured articles as the reward of your exertions in feeding them."

Again, Transportation says to Iron and Manufacturers, "I have brought you food and clothes for what you have furnished the alliance."

We have the wealth of the field, the forest, and the mine, of every thing, in fact, needed for the comfort and prosperity of man, and in such lavish profusion as the hand of Providence alone bestows. But they remain valueless, because we neglect to bring them into close alliance.

The gravity of the question as to how these interests may be thus linked together becomes manifest.

But how can it be done? Not surely by legislative restrictions upon

our existing means of transportation. That, at least, would be but a doubtful expedient. Nor, as some suppose, by the withdrawal of protection. That would, if hastily consummated, destroy our own manufactories and make us the prey of foreign monopolists. Would it help the sale of western produce? Would it enable you to get to market cheaper? Would it aid you in competing more successfully with the Russian grain-dealer? Would it increase the production of iron or cotton? I do not see how it would do any of these things.

Its only result would be a change of masters. You may compel the railroads to carry freight at cost, but that will not mend the matter until some mode of operating them is found less costly than at present. The evil is in the inadequacy of our present system. We must have some cheaper mode, and water offers the only practical solution. Let the Government aid in building these great lines, and by that means effect an alliance of the leading interests of the country, and this will give not only protection to the South and West, but contentment and prosperity to the whole country. The protection we need is the ability to become the active and successful competitors in the markets of the world. Food controls the value of all manufactured articles, as well as of all other industrial and agricultural products. We have an untold capital in this all-important source of wealth, and, by its cheap transportation, the New England manufacturer, in the very teeth of Manchester, may offer the product of his spindles, the Pennsylvania miner may drop his iron on the toes of Scotland and Wales, and the western farmer crowd his flour and corn under the nose of the Russian grain-dealer. We have within ourselves the elements of a success yet unwritten. It only remains for us to grasp them, and we will build up a country that shall be the pride and glory of the world.

By the CHAIRMAN:

Question. Where did you obtain the statement of the result of the steamboat experiments on the Erie Canal?

Answer. I obtained it from the report of the New York canal commissioners.

Question. The recent report?

Answer. Yes, sir; the report of the special commissioners.

Question. They placed the reduction at 65 per cent., did they?

Answer. Yes, sir.

By Mr. DAVIS:

Question. Is that the last test you had reference to—within the last month?

Answer. It was a report that they sent down here two or three months ago.

By Mr. NORWOOD:

Question. Is that Faulkner's experiment?

Answer. No, sir; I do not think it is. This is the steam-towing that I am referring to.

Question. Do you mean the steam applied directly to the canal-boat which carries the freight?

Answer. Yes, sir.

By Mr. DAVIS:

Question. I understand it to be the result of experiments of a recently appointed canal board. There was a board appointed by the legislature for the purpose of testing steam on the canal, and a hundred thou-

sand dollars reward was offered for the best mode presented. Is that the test you have reference to?

Answer. Yes, sir.

By Mr. WEST:

Question. You made some comparisons as to the cost of transshipping grain by the various routes, and gave your figures, as I understand it, at 15 cents per bushel for grain from Saint Louis by the Atlantic and Great Western route to the sea-board?

Answer. Fourteen cents.

Question. What is the distance in miles of water communication by this proposed route from Saint Louis to the sea-board?

Answer. Fifteen hundred and eight miles, measuring the bends of the river as they now are—accurate measurement from Saint Louis to Brunswick.

Question. That would be about four times the length of the Erie Canal?

Answer. Do you mean the canal or of the entire distance?

Question. The entire line of the transportation?

Answer. Yes, sir. It would be one thousand five hundred and eight miles.

Question. Then that would be about four times the length of the Erie Canal?

Answer. Yes, sir; that is three hundred and sixty-three miles long.

Question. What would be the time, in your judgment, consumed in that transit?

Answer. I do not know.

Question. I see you have stated ten days on the Erie Canal?

Answer. Yes, sir. But I never made any calculation on this. I think those steamboats are designed to average the route at three and one-half miles an hour. The speed could be much greater on the river, because the speed of a boat or tow on the river would be as great on the Tennessee, I presume, as it would, under ordinary circumstances, on the Ohio or Mississippi.

By Mr. DAVIS:

Question. Please state the open river navigation and canal?

Answer. There are about twelve hundred miles of open river navigation on the line.

By Mr. CONOVER:

Question. What would be the number of miles of canal?

Answer. There are two hundred and twelve miles of canal proper, I think what you would call excavation. It makes, I suppose, about seventy-five or eighty miles; more than that; it makes three hundred and sixty-five miles, I think, given by the engineer, of canal proper and improved navigation.

By Mr. NORWOOD:

Question. Slack-water?

Answer. Yes, sir; that includes the Muscle Shoals, thirty-eight miles, and the improvement upon the Etowah River from Rome up to Cartersville.

Question. Is it calculated with the new improvements or proposed improvements to canal transportation, to wit, the propulsion of canal-boats, that the same class of boats would load at Saint Louis and continue to the extreme eastern end of your line?

Answer. Yes, sir; that is the view of the Engineer Department.

Question. That no transshipment would be necessary?

Answer. No, sir; not between Saint Louis or any point in the West and the Atlantic sea-board, by this route.

Question. Of what tonnage will the boats be?

Answer. Three hundred tons.

By Mr. SHERMAN:

Question. What is the length of the Muscle Shoals?

Answer. The canal proper is eleven miles.

Question. From the head of Muscle Shoals to Guntersville is how much?

Answer. I could not give that.

Question. Can you give the distance from the Tennessee River to the Coosa?

Answer. Thirty miles, and the canal, including bends and slack-water, is fifty-one miles.

Question. What is the length of the Coosa, as used?

Answer. A hundred miles. There is an obstruction three miles below Rome called Horse-Leg Shoal. Some years ago, as State engineer, I made a survey there. It is very trifling, and can be got rid of with very little difficulty. The State had an idea at one time of improving them.

Question. Where do you leave the Coosa?

Answer. At Rome, and follow the Etowah. From the point where you strike Fisher's Creek there is navigation already. It only wants a little dredging out, and a clearing of the drift from the river. From that point up to Rome there is unobstructed navigation now, except at Horse-Leg Shoals.

Question. How far up do you follow the Etowah?

Answer. About thirty miles, up to Cartersville.

Question. Is that slack-water navigation or canal?

Answer. It is slack-water. The canal begins below the railroad bridges at Cartersville, and follows up that river and up Little River, and crosses the plateau. But the engineer is not at all satisfied that that is the best route. This is an experimental line. He is very well satisfied that a cheaper or easier route could be found; but we give this to show the extreme limit of expense. We have given the extreme limit, not only in the length of the line but in the cost of it.

Question. Have you the levels of that route?

Answer. Yes, sir; they are upon the map.

Question. The profiles, I see, are here, but have you the cuttings?

Answer. They are given on the profile.

By Mr. SHERMAN:

Question. Do you remember the elevation of the Tennessee at Guntersville above the level of the sea?

Answer. No, sir; I do not. The elevation of the summit, I think, is 405 feet above the Tennessee, and something more than that above the Coosa. That is the extreme altitude and highest point on the canal.

By Mr. DAVIS:

Question. But you do not know the distance above the ocean?

Answer. No, sir. I do not know that any experiment was taken during the survey to test that. They only took the elevation above navigable water.

Question. What sized canal have you estimated for?

Answer. The estimate was for a canal 70 feet wide and 5 feet deep, with locks sufficient to pass boats of three hundred tons.

Question. Have you an estimate of the cost of the entire improvement?

Answer. Yes, sir; I have the engineer's report, but it is not with me.

Question. When you say engineer, what engineer do you mean?

Answer. The United States engineer, Colonel McFarland, who will be here at 1 o'clock. He is now on his way. He made the survey under the orders of Congress.

Question. When?

Answer. About two years ago.

Question. Was that a thorough survey?

Answer. Yes, sir; he made a thorough survey, so far as the feasibility of the line is involved, and a report. His report was submitted by the Secretary of War to Congress.

Question. Is it in print?

Answer. Yes, sir; I have it, as I say, but have not got it with me.

Question. You have made some comparisons between the trade and population of New York and Philadelphia. From whence did you obtain that?

Answer. From the United States census.

Question. You took the census report each decade, and from that you made your table?

Answer. I did.

Question. I understood your comparison to be population and exports more particularly?

Answer. Yes, sir.

Question. And while Philadelphia, in the commencement of your statement, was larger both in population and exports, yet when you ended there was a very great difference in favor of New York?

Answer. Yes, sir.

Question. And you attributed it to the Erie Canal?

Answer. Yes, sir. And the statement in relation to the coal-oil you can find in the Bureau of Statistics for that year. You will find that the coal-oil is the great increase; that it has produced the great increase in the exports.

By the CHAIRMAN:

Question. As to the Western and Atlantic Railroad; is that your chief channel of communication between here and Saint Louis?

Answer. Yes, sir.

Question. Is there any other?

Answer. No, sir; nothing comes by any other route to this place from the West, I think, except by the Atlantic road.

Question. I notice that in these tables you furnish freight charges by Green Line rates. What is that Green Line?

Answer. It is a combination of railroad companies. I believe it is a sort of car company that runs certain cars.

Question. I suppose it corresponds to the Red, White and Blue lines on the eastern roads?

Answer. Yes, sir; it is a combination among railroad officials, I think, to run trains.

Question. Is there any one here who can give us any definite information about that?

Answer. Yes, sir; Mr. Thomas Walker can do that. He is not in the room at present, but will be here, and can give you all the information you desire upon that point.

Question. Do you know how the transportation of this Green Line compares with the ordinary freight charges on the road?

Answer. My impression is that it is less.

Question. The Green Line does all the through business, I understand?

Answer. I think so.

Question. Do you know how the charges for 1873, of which you have given us a table, compare with the charges for previous years?

Answer. I do not. I think the charges for the two years were given in that table.

The following document was also submitted by Colonel Frobel:

FIFTH DIVISION.—GEORGIA CANAL ROUTE.

1. The present value of the Tennessee River and of other rivers as commercial tributaries of the proposed Georgia Canal.

2. Geographical extent and population of the territory seeking this outlet to the sea-board.

3. Probable amount of western products which would pass through the Georgia Canal when now completed.

4. Probable cost of constructing the Georgia Canal, and of making the required river improvements.

5. Probable time required to complete the same.

6. Length of season of navigation by this route.

7. The supply of water for the summit-levels, and facts in relation to the most formidable engineering difficulties to be overcome.

8. The number of locks, and total number of feet of lockage.

9. Height of summit above tide-water.

10. Total tonnage capacity of this canal when completed to the Tennessee River, *i. e.*, the total number of tons of freight which can be transported over it annually.

11. Probable value of the market which would be developed for the wheat and corn, and other agricultural products of the Western and Northwestern States, by the construction of this canal.

12. Probable effect which the construction of this canal would have upon the increased production of cotton in the South Atlantic States.

ANSWERS.

Question 1.—The value of lands, farm products, and live-stock along the line of this canal, from the mouth of the Tennessee to the mouth of the Ocmulgee, including their tributaries, is \$446,660,179, viz: Farm products, (annually,) \$123,436,945; live-stock, \$66,385,098; farms and unimproved lands, \$256,838,136. This includes only those counties which are located immediately along the proposed line, and which will find their best or only outlet to a market by this canal. No doubt the canal will drain a much larger area, and the value of products be doubled by a judicious system of short and cheap freighting railways and other roads built as feeders to this great trade-artery.

2. These lands embrace an area of 38,236,932 acres, and with a population of 1,966,178. The population is thin, only about one-half of the lands being improved. The canal would also benefit, in a greater or less degree, the whole Mississippi Valley, and also the great cotton States on the southeast Atlantic sea-board.

3. Probably fifteen millions of tons, or to the extent of its capacity.

4. Both may be completed, according to the estimate of the United States engineer, for about \$30,000,000.

5. In two years, if the whole line be put under contract and the means furnished to push the work as vigorously as possible.

6. Twelve months, or all the year. "It will never be closed by ice or rendered impassable by drought." So says the United States engineer in his report, 1873, page 518.

7. There are no formidable engineering difficulties along the line. It follows the flat lands along the rivers, except for a short distance, where it crosses the ridges between the Coosa and Tennessee Rivers and Etowah and Ocmulgee. The Chattahoochee River flows along the ridge between the Etowah and Ocmulgee, supplying an abundance of water for this summit-level. Town Creek, a large mountain stream, will supply the water for the summit-level between the Tennessee and Coosa. The United States

engineer says of this stream: "An abundant supply of water for the service of the canal can be obtained during eight months of the year, while during the remaining four months, by resorting to the use of storage-reservoirs, a sufficient supply can be obtained." (See Engineer's Report, 1873, page 515.) During the driest season of the year this part of the canal can be operated to half its full capacity, say one hundred and seven boats a day, which nearly equals the average of the Erie Canal at its busiest season. The dry season begins here the latter part of May and ends early in the autumn. This is the season at which very little western produce will be coming forward, and the trade consequently very light. Half the capacity of the canal will pass daily thirty-one thousand two hundred tons, equal to more than a million bushels of grain, which will probably exceed the amount seeking a market at this season.

8. Number of locks not determined. Sum of lockage east and west on the whole line, 1,862 feet.

9. Highest point above navigable water, 674 feet; above tide, 940 feet. These heights are extreme and cannot be exceeded, but they may be greatly reduced in the final location of the work.

10. About twenty-five million tons annually.

11. The four States of Georgia, Alabama, Florida, and South Carolina consume 104,000,000 bushels of grain. Of this amount they produce 57,000,000 bushels, leaving 47,000,000 bushels to be supplied by other States. Averaging this at \$1 per bushel, it would be \$47,000,000. Bacon, beef, lard, pork, apples, potatoes, and other things supplied by the West amount probably to as much, \$47,000,000, making a total of \$94,000,000. Could all these articles be supplied cheaper than they can be raised here, they would swell the amount probably to \$200,000,000, giving an increased home market to the West of more than \$100,000,000 annually, without any increase of our present population and resources.

12. Six million acres of the best land in the South are now devoted to the production of food-crops. Half of the labor and capital of the cotton States is employed in the same way. This land, labor, and capital devoted to cotton would increase the product of that staple (taking the data given by the Bureau of Statistics) three million bales. These bales, at 15 cents, would yield \$225,000,000—increasing to that extent our foreign exports, and causing the wealth of the world to flow toward us instead of away from us, as in years past.

Finally, the United States engineer, Colonel McFarland, in speaking of this route in comparison with other existing and proposed routes, says: "It may be said for it that, while it enjoys every advantage possessed by the others, it is superior to them all in this, that it will never be obstructed by ice; will never be rendered impassable by drought; does not descend sufficiently low into the heated regions to have its cargoes injured by heat or moisture; will require no rehandling of cargo between the points of shipment and discharge, and will cost but little more than the Erie Canal enlarged, while its capacity will be greater; and no doubt it will, like the Erie Canal, pay for original outlay, interest, expense of repair, and service, with a large balance to its credit, in the course of thirty years. (See report of Engineer Department, 1873, pages 518, 519.)

Examination of Maj. WALTER MACFARLAND, United States Engineer Corps.

By the CHAIRMAN:

Question. How long have you been engaged in charge of this survey, by way of the Atlantic and Great Western route?

Answer. The order was made a little over two years ago directing the survey. I have been in charge of it ever since. It was in March or April, 1871, I think.

Question. State to the committee, if you please, such information as will enable them to form a judgment as to its feasibility and practicability, giving distances and engineering features of the work, expenses, &c.

Answer. That is all covered by my report, which is published in the report of the Chief of Engineers for 1872. I can give you the features of it briefly, however, if you desire.

Question. Be good enough to do so, that we may have it in our record in a brief and condensed form, touching only the important points.

Answer. The route passes up the Ohio to the Tennessee, and up the

Tennessee to Guntersville, by the river Tennessee, being river navigation the whole way.

Question. State the distance, if you remember.

Answer. The distance from Paducah to the foot of Muscle Shoals is about two hundred and fifty-five miles. The Muscle Shoals require canaling for about thirty-eight miles; not all canal; perhaps only twenty-eight of that would be canal. There are certain pools in the river. There is another stretch of the river to be made use of from the head of Muscle Shoals to Guntersville, which is the point where the Tennessee reaches its lowest latitude. From Guntersville the route would be by canal about fifty miles, the canal and slack-water navigation across Sand Mountain to the Coosa River. They are only thirty-five miles apart there; but following the creeks, the route would be about fifty-one miles.

By Mr. NORWOOD:

Question. State, if you please, the proportion of that distance which would be canaling excavation and what slack-water.

Answer. Thirty-three miles of that would be canaling, and seventeen and a half miles slack-water; that is, between the Coosa and the Tennessee.

By Mr. SHERMAN:

Question. That is the most difficult part of the route, I suppose?

Answer. You cannot call it the most difficult. It would be relatively the most expensive. It is easy enough work and plain sailing, although it would be expensive; but the question which has usually given it the character of being a difficult matter is the question of water-supply. The survey shows that we can get all the water we want for a larger canal than the one we propose to construct.

Question. Describe that section briefly, with the altitudes you have to overcome.

Answer. The portion between the Tennessee and the Coosa, fifty-one miles in length, would consist of thirty-three miles of canal, and seventeen and a half of slack-water navigation. The summit level would be about 400 feet above the level of the Tennessee. The Coosa is 64 feet lower. The total lockage would be 864 feet, passing from one river to the other. The supply of water is abundant.

By Mr. NORWOOD:

Question. That is, you mean up and down 864 feet?

Answer. Yes, sir; 400 feet on the Tennessee side of the mountain, and 464 feet descent to the Coosa. During the dry season of the year we would have to make use of reservoirs, say for three or four months. The flow of Town Creek would not be sufficient, and reservoirs would have to be made use of, as they are made use of to-day on the Erie Canal, and, indeed, in every canal in operation that I know of.

By the CHAIRMAN:

Question. Your report shows in detail the supply of water and the cost of making these reservoirs, I suppose?

Answer. Yes, sir; that has been the only point about which there has been any question—that connection from the Tennessee to the Coosa. The survey has shown conclusively that it was just as practicable as any other part of the route.

Question. And that doubt arose from what?

Answer. Only for want of information.

Question. As to the supply of water?

Answer. Yes, sir.

Question. There is no doubt upon any other ground?

Answer. No, sir. Town Creek is sixty or seventy miles long, and there is water enough to run the Erie Canal; but during dry seasons the upper part of it becomes dried up. In consequence, therefore, reservoirs would have to be constructed by damming some of the valleys, of which there are a great many there, to hold a supply to last during the three months of the dry weather.

Question. Careful estimates have been made from actual surveys?

Answer. Yes, sir.

By Mr. DAVIS:

Question. Was the water gauged?

Answer. Yes, sir; we have had a party there during the last six months every day gauging it. From the exit of this canal on the Coosa, where the canal joins the Coosa, the route would be up the Coosa one hundred and fifty-three miles to Rome, being river navigation all the way.

By the CHAIRMAN:

Question. Slack-water?

Answer. No, sir; that is navigable now.

Question. What size do you propose to make your canal, prism, and locks?

Answer. The original proposition was to make the canal 70 feet wide at the water-surface, and 56 feet at the bottom, 5 feet deep. The design, somewhat hastily made, was to make the locks 30 feet by 120. An examination of the plans showed a better proportion to be 27 by 135.

Question. What sized boats would that give you?

Answer. With a draught of 4 feet of water through a 5-foot canal, it will give a boat which will carry pretty nearly three hundred tons.

Question. Is there not some difficulty on the rivers, either on the Tennessee or some others?

Answer. Yes, there is a difficulty; but the estimate for the route covers the improvement of all those rivers.

Question. And give 4 feet of navigation?

Answer. Three feet during the low stage of water, and at any other season of the year you can get 5 or 6 feet. The largest vessels on the Mississippi run up to Florence.

Question. What do you estimate to be the length of the dry season, when you have not more than 3 or 4 feet?

Answer. Between three and four months, say July, August, September, and October. That varies very much, however.

Question. Drawing 3 feet, what would be the tonnage of the boats?

Answer. Between 180 and 200 tons. About 190 tons would be a fair average. These locks were made broader. The shallowness of the rivers is what determines the depth to be given to the canals. During the low stage of water there is plenty of water in the Tennessee and Coosa Rivers to float almost anything which floats on the Mississippi, excepting on the bars here and there. There are a number of them. You can increase the depth to 3 feet at a comparatively moderate expense over all the bars, so that 3 feet of water can be had the whole year round; and the increase of the cost would be almost in geometrical proportion to make it 3, 4, or 5 feet deep. I limited the estimates to making 3 feet at low water and 5 feet in high water.

By the CHAIRMAN:

Question. Did you not encounter some difficulties in estimating for as large vessels as you require, on account of the short bends in the river?

Answer. Yes, sir; that is the reason we do not make locks much longer in the Sand Mountain route. That is the difficulty. In following up the valley from Short Creek and down Will's Creek the turns are sometimes very sharp.

Question. Are there any difficulties of that kind in the Tennessee?

Answer. No, sir; the Tennessee is a larger river than the Ohio. It averages broader and deeper.

Question. Have you estimated the expense of canalizing, instead of using Short Creek and Will's Creek?

Answer. There is no other mode of going over. We would, of course, use them for slack-water navigation as far as practicable.

By Mr. NORWOOD:

Question. Cannot those short turns be straightened?

Answer. Yes, sir, they can; and I have added to the report of the original survey for that very thing. They can be straightened to a reasonable extent.

By the CHAIRMAN:

Question. Suppose those short turns in those two streams be straightened as contemplated in your additional estimates, how much larger could you make your boats?

Answer. That was taken into consideration in determining the dimensions of those locks. Cutting off the corners as much as possible, will permit our using locks 135 feet long, and that would give the capacity of those boats I have mentioned.

Question. So that the capacity is based on the actual estimates for straightening the streams?

Answer. Yes, sir; from actual survey.

Question. Is there any difficulty in any of the other rivers between the Tennessee and the Atlantic?

Answer. No, sir. We have passed up the Coosa now with perfect plain sailing one hundred and fifty miles to Rome, and there, on the Etowah River, we would probably arrange for slack-water fifty-three miles up, a little beyond Cartersville; the original estimate provided for a canal through that portion. A later survey shows that we can fit it for slack-water navigation at a reduction of very nearly two millions of dollars on the cost of canalizing.

Question. And make equally good navigation?

Answer. Yes, sir. Passing from Rome by slack-water up the Etowah to a point a little beyond Cartersville, the distance being fifty-three miles from Rome, we then reach the beginning of the main canal across the State of Georgia, and that line is one hundred and fifty-eight miles long to Macon.

By Mr. NORWOOD:

Question. There is no slack-water in that?

Answer. No, sir; that is canal the whole way. There would be a short tunnel on it, 3,200 feet long, an aqueduct across the Chattahoochee 375 feet long, with some embankments, making it 1,900 feet in length. That aqueduct would have to be 117 feet above the level of low water in the Chattahoochee. The line follows small creeks that run into the Ocmulgee, and follows the valley of the Ocmulgee down to Macon.

By the CHAIRMAN :

Question. There you strike what ?

Answer. It has not been determined yet whether we can make use of the Ocmulgee from Macon down to Hawkinsville.

By Mr. SHERMAN :

Question. What other difficulties are encountered of an engineering character, excepting this tunnel ?

Answer. None, whatever, sir ; it is an expensive route, but there are no difficulties. It will need a great deal of cutting and filling. The country is a very undulating and rugged one, there not being much rock excavation, we following the windings of the small creeks as much as we can. In one or two places it is not direct. When we reach the valley of the Chattahoochee we have to pass out fifteen or twenty miles, in order to get a reasonable crossing. We could cross it there, but it would cost much more than it would be worth. Because it was uncertain whether the Ocmulgee could be used from Macon to Hawkinsville, the estimate covered the cost of constructing a canal over that portion. It is quite possible on future examination we will find that that part of the river can be used, and the estimate be still further reduced. From Macon, if the canal stops there, or from Hawkinsville, if it stops there, there would be river navigation to the sea. From Macon to Hawkinsville is about forty-five miles. From Macon to the sea is about five hundred miles. From Hawkinsville the boats we propose can navigate down ; but, as I have said, Congress never ordered a survey of that part ; and we do not know what it would cost to fit the river itself between Macon and Hawkinsville for navigation. Brunswick is ten miles a little south from the mouth of the Altamaha. You could either go south to Brunswick, or northeasterly to Savannah, inside of the sea islands.

By Mr. DAVIS :

Question. How much water is there at the sea at Brunswick ?

Answer. I do not think there is over 18 feet at low water. I do not remember exactly. I speak only from a general knowledge that most of those parts average about 18 feet at low water.

By Mr. SHERMAN :

Question. Is it five hundred miles from Macon to Savannah ?

Answer. Yes, sir.

Question. It must be quite circuitous ?

Answer. Yes, sir ; all those rivers are very crooked. They are generally about double the length of the right line between terminal points.

Question. You say that is navigable now for steamboats ?

Answer. Yes, sir ; up to Hawkinsville. But there has never been an attempt made to improve that river, and there are a great many snags and bars that could easily be removed, and, once opened, it could be easily kept so.

By Mr. NORWOOD :

Question. Do not steamers now carry cotton from Hawkinsville to Savannah ?

Answer. Yes, sir ; and it has been said that it is not many years since they did the same from Macon. The upper part is not used now, except for a few flats.

Question. The uncertainty, in your opinion, as to whether the canal would terminate at Macon or go on to Hawkinsville arises simply from the fact that you have not surveyed that line ?

Answer. Simply from that; and so, in making the estimate, I made it large enough to cover an extreme case. The canal, of course, costs four or five times as much as slack-water navigation. The estimate covers the extension to Hawkinsville.

By Mr. SHERMAN:

Question. Have you examined the question of the diminution of the supply of water in the Gulf States, whether the fall of water since the country has been cleared up has been diminished?

Answer. I have made no examination of it. For one reason, it has not occurred to me, and I do not think it can be ascertained anyhow at present, because sufficiently full statistics cannot be had.

Question. Have you heard any statements of that kind as to the diminution of the water in the streams in the cotton States?

Answer. I was told at Macon that boats used to come up to that point which are now compelled to stop at Hawkinsville.

Question. Is that the only fact you know about that?

Answer. That is the only point I know anything about.

Question. Whether that is by diminution of water or not you do not know?

Answer. I do not.

Question. You know on the Ohio and all the upper rivers that the supply is conceded to be gradually diminishing?

Answer. Yes, sir. I suppose that was the result of civilization, the development of the country, and the cutting away of the forests.

Question. You have given now the distances of each section of this proposed improvement?

Answer. I believe I have.

Question. You refer to your report of what year?

Answer. My report upon this route is contained in the report of the Chief of Engineers for 1872, at page 509. You will find, by examining that report, that the estimate amounts to about \$34,000,000. That provided for a canal—not slack-water navigation—from Rome to the mouth of Owl Creek, fifty-three miles above Rome. We have since ascertained that we can fit that for slack-water navigation at a reduction of \$2,000,000 below the cost of the canal. That estimate also included—because we had no positive information on the subject—an expenditure of \$1,000,000 from the mouth of the Altamaha to Brunswick. No survey had been ordered of that portion, and all that could be obtained in the way of information was from the map. Map measurements are, of course, uncertain. We know that that route is nearly open as it is; and it would probably now not take over \$50,000 to open it behind the sea islands to Brunswick. My report particularly states, however, where these amounts are mentioned, the reasons why they are given, that they have not been surveyed, and are made up from the best information in my possession.

By the CHAIRMAN:

Question. Your report is based on the present prices and cost of labor?

Answer. Yes, sir. They are taken rather larger—the prices throughout—than the prices that are paid on rivers now and that are paid on the railroads.

By Mr. DAVIS:

Question. You speak of your report. Was there a previous report made to this?

Answer. No, sir.

Question. I see you ascend after you cross over from the Tennessee up to Rome?

Answer. Yes, sir.

Question. What is the elevation above the sea?

Answer. After leaving Rome, do you mean?

Question. Yes, sir.

Answer. The summit-level on the Georgia route is about 1,000 feet, or a little over, above tide-water; but it is only about 700 feet above the level of the river at Macon.

Question. What is it above the Ohio?

Answer. I have no means of comparing it with the Ohio. Those rivers fall so irregularly and uncertainly. I have no means of giving you the desired information.

Question. Your survey did not reach to the Ohio down the Tennessee?

Answer. Yes, sir. But in those long stretches of river we cannot tell what the fall is except by using a level. There are hundreds of miles the fall of which cannot be ascertained except by the use of instruments, and our measurements are only made where there are serious obstructions.

Question. Did you gauge as to the supply of water on your summit-level?

Answer. Yes, sir.

Question. You have no doubt about that?

Answer. None at all. The Chattahoochee will furnish the supply for the summit-level of the Georgia route. I do not recollect the amounts precisely, but that also is given in my report. The supply both for the Georgia branch and for the branch between the Tennessee and the Coosa is given in full in my report of 1872.

Question. Do you have more than the one tunnel which you speak of, of 3,200 feet?

Answer. No, sir; that is all. We have one very deep cutting across the Sand Mountain, and 19 feet deeper we would convert it into a tunnel.

By the CHAIRMAN:

Question. Does your estimate of \$36,000,000, after deducting these charges, cover the entire expense from the Ohio to the Atlantic?

Answer. Yes, sir; it makes about \$4,000,000 for river improvements.

By Mr. DAVIS:

Question. Did you add a per cent. for contingencies after making your estimate?

Answer. That was done in each case, varying from 10 to 20 per cent.; 10 per cent. where the matter was easy and 20 per cent. where it was difficult.

By Mr. NORWOOD:

Question. Twenty per cent. on the gross estimates?

Answer. On two or three sub-estimates.

By Mr. DAVIS:

Question. Is the Coosa River navigable down to Mobile at present?

Answer. No, sir; it is navigable from Rome down to Greensport, about twelve miles below the canal outlet on the Coosa. Then for one hundred and thirty-five miles it is not navigable. It is a series of reefs,

similar to those in the Tennessee at Muscle Shoals. There is no navigation in the Coosa until you get down to Wetumpka.

Question. How far is that place above Mobile?

Answer. I think it is about four hundred miles. The distance from Rome to Mobile is seven hundred miles, I know.

By the CHAIRMAN:

Question. You have made no estimates of the probable costs of improving the Coosa?

Answer. Yes, sir; I have that survey made; but it has nothing to do with this special canal-route. That, however, is contained in the same report. I surveyed the Coosa River from Wetumpka to Greensport.

Question. Do you remember the estimated costs for that improvement?

Answer. I think it was about two and a half millions of dollars.

Question. That improvement would give Mobile the same facilities as it would Brunswick, would it not?

Answer. Yes, sir. Boats have passed from the Tennessee River to Mobile, hauled across a portage at Oostenaula to the Coosa, and during very high stage of water have passed over the obstructions in the Coosa; but no boat ever could come up over them in their present condition.

By Mr. DAVIS:

Question. Did you state the miles of canal upon your summit-level?

Answer. I did not give the length of the summit-level of the canal. It is about thirty-three miles, that is, the Georgia summit-level. The dimension given to the locks permits the passage of boats that are larger than any now in use on the Erie Canal. The largest used there are about 240 tons capacity.

By the CHAIRMAN:

Question. Do you remember the entire lockage on the canal?

Answer. The amount of lockage in the Muscle Shoal Canal would be 134 feet. That is a part of this route. It falls 134 feet in thirty-six miles. The lockage on the Sand Mountain portion would be 864 feet. The lockage ascending to the summit-level of the Georgia portion would be 210 feet, and descending from the summit would be about 700 feet. I cannot recall exactly what that is, but the report shows it precisely. That would give just about 1,900 feet in all.

Governor Smith asked me some time ago to send him a communication upon this subject, which I have done. For the information of the committee I beg leave to read that communication to them. It is as follows:

UNITED STATES ENGINEER OFFICE,
Chattanooga, Tenn., December 22, 1873.

GOVERNOR: In compliance with the wish expressed by you several months ago, I have the honor to submit, herewith, some considerations upon the proposed line of water-communication between the Mississippi River and the Atlantic Ocean, by way of the Tennessee, Coosa, Ocmulgee, and Altamaha Rivers, and connecting canals, the surveys for which were ordered by Congress in March and April, 1871, were conducted under my supervision, and were reported upon by me, under date of May 25, 1872. The report is to be found in the report of the Chief of Engineers, contained in the report of the Secretary of War, accompanying the President's message for 1872.

The most of the views herein given were presented by me to the convention which met at Atlanta in May last, in response to your call as governor of the State of Georgia; and I shall quote freely from the remarks then made by me.

The idea of opening this route had its origin in the efforts which have been made for some years past by the great grain-producing regions of the Northwest to secure

other and cheaper outlets for their enormous crops than those now existing, and in the conviction that water routes still furnish the cheapest known modes of conveyance.

A glance at the map of the United States will show that at present there are but two all-water routes from the valley of the Mississippi to the sea-board. One, all natural—the Mississippi River; the other, partly natural, partly artificial—the route by the great lakes and the Hudson River, and the canals of Ohio, Indiana, Illinois, and New York.

But there are two other points, and only two, where the tributaries of the Mississippi approach so nearly the head-waters of rivers that flow into the Atlantic, that a comparatively small amount of canaling would connect them, thus giving two additional all-water routes between the Mississippi Valley and Atlantic Coast.

These two points are where the Alleghany range separates the James River from the Kanawha, in the one case, and the rivers of Georgia from the Tennessee, in the other.

By the former connection, an all-water route would be opened from the Mississippi through the Ohio and Kanawha Rivers and the proposed canal across the mountains, to the James, and down the James River to Chesapeake Bay, and a port at Norfolk.

By the latter, an all-water route would be opened from the Mississippi, through the Ohio and Tennessee Rivers, and the proposed canal between the Tennessee and Coosa Rivers, or their branches, thence up the Coosa to Rome, Georgia, from Rome by canal and slack-water navigation to Macon, Georgia, and down the Ocmulgee and the Altamaha Rivers to the Atlantic and a port at Savannah, Brunswick, or Darien.

Both schemes are old—the former being attributed to the far-sightedness of our first President, Washington.

The latter was certainly talked of thirty years ago, although the thing then proposed was to connect the Tennessee with the Savannah River directly.

Both routes have been examined under orders of the General Government; both have been found practicable, and estimates of the cost of opening them have been furnished.

It is with this latter only that I have to do.

The route as proposed, beginning at the mouth of the Ohio River, is as follows, viz: Up the Ohio to the Tennessee, up the Tennessee, passing Muscle Shoals by a canal thirty-eight miles long, to the mouth of Short Creek, two miles and a half above Gunter'sville, Ala., the lowest latitude reached by the Tennessee; up Short Creek, across Sand Mountain, and down Will's Creek to the Coosa, fifty and one-half miles, thirty-three of which would be by canal and seventeen and a half by slack-water; from the mouth of Will's Creek, two miles and a half below Gadsden, Ala., up the Coosa to Rome, Ga.; from Rome up the Etowah River by slack-water, to the mouth of Owl Creek, fifty-three miles; from the mouth of Owl Creek, up the valley of Little River, across the Chattahoochee plateau, (crossing the Chattahoochee by an aqueduct 117 feet high,) down the Yellow and Ocmulgee Rivers to Macon, one hundred and fifty-eight and a quarter miles; thence down the Ocmulgee and Altamaha Rivers to the sea, a distance of twelve hundred and eighty-eight miles, three hundred of which is by canal and slack-water, (two hundred and twenty-nine and one-quarter canal, seventy and one-half slack-water,) and the remainder by river. If the canal should be extended beyond Macon, as far as Hawkinsville, the proportions would become about as follows, viz: Two hundred and seventy-five miles of canal, seventy of slack-water, and nine hundred and forty-three of river. The total length of canal and slack-water navigation combined, then, will be from five to fifty miles shorter than the main line of the Erie Canal, while the cost of building it, together with the cost of improving the river portions of the route, will be between three and four millions of dollars less than the cost of constructing the main line of the Erie Canal enlarged.

The canal around the Muscle Shoals, apart from the duty which it is intended to perform as a link in this proposed chain of water-communication between the Mississippi River and the Atlantic Ocean, is designed to overcome the great obstacle which these shoals interpose to the continuous navigation of the Tennessee, and should, therefore, be adapted to the passage of the largest steamers ever likely to be employed upon it, in order that the valley of the Upper Tennessee, so rich in agricultural and mineral resources, may no longer, for want of cheap and easy water-communication with the great centers of wealth and population in the Mississippi Valley, be retarded in its development and cut off from the advantages enjoyed by all the other regions which are watered by great tributaries of the Mississippi.

The proposed dimensions of this canal are as follows: 100 feet wide at the water-surface, with passing recesses at intervals for the use of the largest steamers; 6 feet deep; lock chambers 60 feet wide and 300 feet long between miter-sills. The limit of width is fixed by certain local conditions.

The proposed canal between the Tennessee and the Coosa Rivers will also, besides serving as a link in the same great chain, have another duty to perform; for in connection with the improvement of the Coosa, it will open direct water-communication between the valley of the Tennessee and the rich cotton and mineral regions of Central and Northern Alabama, and will furnish a short and easy water-route from East-

tern Tennessee and Northern Georgia and Alabama to Mobile and the Gulf of Mexico. For this reason it would have been well to have designed this canal also for the passage of large river-steamers; but, unfortunately, the narrowness and crookedness of the rocky valleys through which this canal must pass render this impracticable except at a cost out of all reasonable proportion to the benefits likely to be attained by its accomplishment; and we are restricted, therefore, to arranging it for the passage of canal-boats or barges of ordinary capacity, and of the steam-tugs designed for moving them.

The dimensions given to this canal will determine the dimensions to be given to the canal from the mouth of Owl Creek to Macon; for it would be manifestly useless to give the latter any greater capacity than the former.

It is designed to improve the river portions of the route so that during the dry season, or season of lowest water, 3 feet water may always be carried over the bars and shoals. To attempt to give a greater depth during this season would increase the cost too seriously; for with increase of depth the number of obstacles and the difficulty of removing them increase almost in geometrical proportion. During the remainder of the year there will be no difficulty in carrying 5 or 6 feet water over the same portions, and the depth of the canal should not exceed this.

By making the canal trunk 70 feet wide at the water-surface and 5 feet deep, with lock-chambers 27 feet wide and 135 feet long between miter-sills, we permit the passage of boats 120 feet long by 26½ feet beam. If these draw 12 inches when empty, (a liberal allowance,) they will have a capacity when loaded down to a draught of 4 feet of about three hundred tons—equivalent to about ten thousand bushels of grain; and during the season of low water, when their draught must be limited to 3 feet, their carrying capacity will be about one hundred and ninety-eight tons, or six thousand six hundred bushels.

The smaller grain-barges made use of on the Upper Mississippi have an average capacity of four hundred and fifty tons, and are about 150 feet in length and 23 feet beam, with a draught of 5½ feet when fully loaded. It would seem to be very desirable to give the canals now under consideration such dimensions as would permit the passage of these Upper Mississippi barges; but the excessive crookedness of their courses, involving numerous comparatively sharp turns, makes it necessary to reduce the lengths of the boats as much as possible, and the dimensions before given have been arrived at. These differ slightly from those first proposed, in having the lock-chambers longer and narrower.

The extreme tonnage of the boats passing through the Erie Canal is, according to the last published reports, about two hundred and forty tons, while their average load is about two hundred and ten or twenty tons. The average cargo, however, for the past ten years, has varied from one hundred and fifty to one hundred and eighty tons; less, it will be observed, than our proposed canal can carry through at the lowest stage of water. The locks on the Erie Canal are 110 feet long between miter-sills, and 18 feet wide, permitting the passage of boats 97 or 98 feet long by 17½ feet beam.

I desire here to call attention to a curious and interesting fact, going to show that the largest boats are not always the best for canal-navigation. The Delaware and Raritan Canal, which forms a link of the inland line of water-communication between the cities of New York and Philadelphia, is of the following dimensions, viz: eighty feet wide at the water-surface; average depth, 9 feet; locks, 220 feet long and 24 feet wide. The largest horse-boats plying upon this canal can carry four hundred and fifty tons, but the average actual cargo is about two hundred and ten tons. Mr. John S. Millis, of the firm of W. P. Clyde & Co., of Philadelphia, who was formerly superintendent of the Delaware and Raritan Canal, stated to the New York commissioners of canals, as the result of his experience, that the most economical boat or barge for this canal is 110 feet long, by 23 feet 3-inches beam, carrying three hundred tons. Boats 140 feet long and carrying five hundred tons have been tried, but on account of extra expense of crew to meet the increased difficulty of management, were not found economical.

The auditor of the canal department of the State of New York, in his report for the fiscal year ending September 30, 1872, says: "From the experience of the season of 1872, our canals in their present condition are equal to all the requirements likely to be demanded of them in 1873, and have no rival on the score of cheap transportation at the present time."

We may rest satisfied, then, that the three-hundred ton boats which would be able to pass through our proposed canal when completed are the largest that can be economically handled under the present system of towing.

I beg now to call your attention to a question which has been frequently asked of late years, and which, though easy enough to answer by those who have taken the trouble to investigate the subject, finds few supporters among the public at large: and that is, whether in these days of railroads it is worth while to build canals at all? Whether railroads cannot carry freight as cheaply or more cheaply than it can be carried by canal?

High engineering authority has said "that railways have entirely superseded, and will in future prevent the extension of, canal or water carriage as a means of ordinary transport," and the remark is literally true, for no one would think of constructing nowadays a canal for ordinary purposes of transportation, however great might be the facilities for doing so. But there may be special and exceptional reasons which may not only justify but compel the construction of canals, as in the case under discussion, where extensive independent navigable streams may be united by canals in such a manner as to form one continuous line of water-communication which will be used for commercial purposes. It cannot be supposed for an instant that Stephenson intended to deny the propriety of building canals for such purposes. His book was written in England, where no such contingency exists, and the remark evidently refers to short lines of canal which do not form links of extended lines of water-communication. It is quite possible that over even these freight may be carried much more cheaply than by rail, but there are certain objections to them, such as the danger of breaks, and the difficulty and cost of their repair, but chiefly the amount of time lost in transportation, that render their superseding certain in a great majority of cases.

I shall now proceed to show from ascertained facts the relative cost of conveying freight by canal and by rail.

More than two years ago the State of New York offered a reward of \$100,000 for the "practical and profitable introduction upon the canals of steam, caloric, electricity, or any motor other than animal power for the propulsion of boats," and appointed a commission of well-known gentlemen to investigate and report upon the subject. The very able and thorough report of their engineer, Professor D. M. Greene, of Troy, New York, discusses very fully the question of the relative expense of moving canal-boats by horses or by steam, and also the cost of carrying freight by rail; and being based upon a long series of observations upon the workings of the New York canals, and upon sworn official statements of the New York and Pennsylvania railroads, it may be accepted as correct.

Taking up two or three of the best managed northern roads, viz, the Lake Shore and Michigan Southern, the New York Central and Hudson River Railroads, and the Pennsylvania Central, it is found from their published reports for 1870 and 1871 that the average cost for fuel, maintenance, repairs of machinery, and operating expenses of these roads, (including the Erie and excluding so much of the Lake Shore and Michigan Southern as lies outside of the States of New York and Pennsylvania,) all being trunk-lines with moderate grades, was \$1.38 $\frac{3}{4}$ per train per mile.

Taking two hundred and forty tons as the average load east on one of these first-class lines like the New York Central, having ruling grades of 20 feet in the direction of greatest movement, and one-half that amount as the average load west, we have an average load for both directions of one hundred and eighty tons per train, which is actually fifty-three tons more than the average on the New York Central and Hudson River Railroads for 1871; and this, at the average rate above mentioned, viz, \$1.38 $\frac{3}{4}$ per train-mile, gives 7.704 mills as the cost per ton per mile for maintenance, repairs of machinery, fuel, and operating expenses.

The interest upon the total cost of these roads and their equipments at 7 per cent, divided by the whole amount of their ton mileage, gives 4.593 mills per ton per mile, to cover interest, and we have, therefore, 12.296 mills per ton per mile to cover the whole cost of fuel, repairs, maintenance, operating expenses, and interest at 7 per cent. The rate actually charged upon the Lake Shore and Michigan Southern Railway in 1870 was 1 $\frac{1}{2}$ cents, and in 1871, one and thirty-nine hundredths of a cent per ton per mile. Upon the Pennsylvania Central the cost of transportation in 1871, exclusive of interest, 8.074 mills per ton per mile. Adding the rate before given for interest, the cost for fuel, repairs, maintenance, operating expenses, and interest, amounts to 13.332 mills per ton per mile, while the charge was actually 13.57 mills.

If a road were used exclusively for freight purposes so that trains might be run, say, every twenty minutes, the ton mileage might be increased fivefold over the amount given above, and the entire cost per ton per mile, including interest at 7 per cent, might be reduced to 9.235 mills per ton per mile; and it is the belief of the able chief-engineer of the Lake Shore and Michigan Southern Railway that with an additional, or third track, on a road of such length, grades, and curvatures as his, that freight might be carried at three-quarters of a cent. per ton per mile.

Here, then, we have what has been actually accomplished by railroads, and what it is believed that they can accomplish under the most favorable circumstances. It is not pretended that any such results can be attained on ordinary roads. Here in the South rates, instead of being a fraction of a cent or a cent and a fraction, vary from 2 cents to 2 $\frac{1}{2}$ cents per ton per mile.

Now let us see what has been done on the canals.

Under the rules laid down by the canal commissioners three steamers made each three round-trips from Buffalo and Troy; while eight others made partial trips, but began them too late in the season to admit of their completing them as required by

the commissioners. The steamers were required to carry full loads in one direction and half loads in the other.

The results were as follows: The cost by horse-towage, including interest on outlay at 7 per cent., maintenance at 10 per cent., cost of towing, cost of crew of six persons, was 4.464 mills per ton per mile. Where the horses were owned by the boat it was 4.1 mills per ton per mile. If the boat ran light on its return trip the cost was increased about one mill.

The cost by steam-towage, including interest at 7 per cent., cost of maintenance at 10 per cent., cost of crew of six persons, fuel, oil, tallow, waste, was 3.28 mills per ton per mile. If the steamer carried one hundred tons west the rate would be reduced to 2.73 mills per ton per mile.

The report goes on to say that if the canal were kept in the best condition, with full depth of water, and freed from obstructions such as grass, weeds, &c., the rate by steam-power would be reduced to 2.68 mills per ton per mile, a reduction of 50 per cent. below the cost of towing by horses, and this includes, be it remembered, not only all actual outlay except tolls, but the cost of maintenance and repairs, and 7 per cent. interest on the first cost.

Now, put these figures face to face, and we have the cost of moving freight per ton per mile as follows:

	Mills.
By rail, under the most favorable circumstances.....	9.235
By canal, horse-towage, without toll.....	5.039
By canal, steam-towage, without toll.....	2.68
Adding the canal tolls, these rates become—	
By canal, horse-towage 67 per cent. of the railroad rate.....	6.89
By canal, steam-towage 45 per cent. of the railroad rate.....	4.018

Even supposing that under the favorable conditions mentioned by the chief engineer of the Lake Shore and Michigan Southern Railway, the rate might actually be reduced to three-quarters of a cent a ton per mile, this would still be in excess of the canal rates either by steam or horse towage, including tolls, while at the same time these latter include all the elements of expense covered by the first, viz, repairs, maintenance, cost of operating, and interest at 7 per cent.

This must be regarded as conclusive as to the relative cost of the carriage of freight by water and by rail, and I may add that these results are confirmed by the experience of the English and French canals.

The estimated cost of the opening of this route, as given in my report upon the subject, was \$39,900,000, divided as follows:

Muscle Shoals Canal	\$3,676,000
Sand Mountain Canal	11,570,607
Georgia Canal	20,435,684
Total for canals from actual survey	35,6-2,291

For the improvement of the river portions of the route, obtained from the best information I could obtain, (not from actual survey,) \$4,000,000.

It is to be borne in mind that this survey and examination was but a preliminary one, intended only to ascertain whether it was practicable to open such a route, and what would be its probable cost.

It was not intended to fix the exact route or to determine positively the mode of its construction. These are questions which should be deferred until it is actually determined that the route should be opened, when a very complete system of surveys should be undertaken, with the view of deciding what especial route and what method of construction would be absolutely the best.

It has already been ascertained that a material reduction below the original estimate can be made; for instance, by adapting the Etowah River between Rome and Cartersville to slack-water navigation, permitting the passage of such steamers as now ply on the Coosa below Rome instead of canalizing it, a reduction of nearly \$3,000,000 would be effected; and the cost of a canal connection from the Altamaha to Brunswick, Ga., included in the first estimate, would be reduced nearly \$1,000,000.

The reason for these differences is found in the fact that, of this whole line of nearly thirteen hundred miles, Congress had made appropriations for and had ordered surveys of only about three hundred miles; and of the remaining portions, it was not known certainly, in these instances whether canalizing would have to be resorted to or not; and under this doubt, the possible cost of this work was included, in order that the estimate should certainly cover the cost of opening the whole route, and that there might be no necessity in the future for going beyond the amount originally estimated. We know now that we may reduce the estimate \$4,000,000, all of which reduction comes out of the estimated cost of the canal portions of the route.

I may say here that for the reason just given, namely, that the estimate was intended to absolutely cover the cost of construction, the scale of prices adopted was a very liberal one—much in excess of prices commonly obtained for work on railroads and on river improvements.

And now a word in respect to the relative merits of the various all-water routes from the Mississippi to the sea, existing and proposed. It is certain that all are needed, and with the lapse of years that need will become still more imperative. All the water-routes, then, that can be opened must be opened, and railroads in their best form must lend their aid. It is a mistake to suppose that there is any natural antagonism between these two great modes of conveyance. The one helps the other. The lighter and more valuable products of the industry of the country will move by rail; the coarser and heavier products by water when they can. The Erie Canal, by building up Central New York, made the New York Central Railroad possible, and the business of that road at this day far exceeds the most sanguine anticipations of its founders, while the traffic on the canal has grown side by side with it from 1,100,000 tons in 1837 to 6,500,000 tons in 1871.

At the rate at which the production of grain has increased within the past few years there will be work enough in the next decade for all the canals and railroads that can be built.

Taking Saint Louis, which has made itself and which will remain the center of trade of the Mississippi Valley, as a starting-point, the distance to New York by way of the Illinois, Michigan, and Erie Canals, the great lakes and the Hudson River, is one thousand nine hundred and sixty miles, about six hundred of which is by canal.

From Saint Louis to Brunswick, Ga., by the Georgia route, is about one thousand five hundred miles, which is about fifty miles less than the distance by water from Chicago to New York, about three hundred of which is by canal, a difference in its favor of three hundred miles of canal and about one hundred and sixty of river navigation.

By way of the Ohio canals, the distance from Saint Louis to New York is about eighteen hundred miles, six hundred of which consist of canal. The Georgia route has about three hundred miles less of canal, while the river portions of the two routes are about the same in length.

By the James River and Kanawha route, the distance from Saint Louis to Norfolk is about the same as the distance from Saint Louis to Brunswick by the Georgia route; and the former has four hundred and eighty-six miles of canal and slack-water navigation against but three hundred by the latter route, while at the same time it requires nearly double the amount of lockage required by the latter. The estimated cost of opening the latter route, moreover, is more than \$12,000,000 less than the estimated cost of opening the James River and Kanawha route, while providing for the passage of boats of an equal capacity. In addition, the Georgia route will never be closed either by ice or by drought.

By the Mississippi, the distance between Saint Louis and New Orleans is twelve hundred miles—all river—with a hundred and ten miles of river additional to reach the sea; altogether nearly two hundred miles less than the distance from Saint Louis to the sea by the Georgia route. But a vessel loading at New Orleans for Europe has nearly a thousand miles farther to go than one loading at Savannah for the same destination, and has, moreover, to risk the dangers of the passage of the Florida straits; dangers, the character of which you will better comprehend when I inform you that the insurance on cargoes shipped from the Gulf ports to Europe is nearly double that charged by the underwriters for similar shipments from the South Atlantic ports, while the difference in the rates of freight to Europe from New Orleans, and from Savannah, varies from one-eighth to one-quarter of a penny a pound on cotton, and proportionately on tobacco, which corresponds to a difference of from \$5 to \$10 per ton; which again, for grain, would make a difference of from 15 to 30 cents a bushel. And even with this difference in their favor, ship-masters will not take freights to and from the Gulf ports, if they can avoid it.

By the lake route, navigation is closed by ice during five months of the year, and all the capital invested in boats lies idle during that period, and of course the interest upon it has to be made up by the freight-charges of the remaining seven months.

By the James River and Kanawha route a similar difficulty must be experienced, though of shorter duration.

By the New Orleans route, corn, notwithstanding all that is said to the contrary, is injuriously affected by the heat and moisture. The remark which commonly accompanies the denial of this assertion, "that California grain in its passage to Europe crosses the equator twice and yet is not injured," is explained by the fact, well known to grain-dealers, that the California grain, owing to the climate of California, becomes completely dried before it is garnered, and as heating and souring is due entirely to the moisture contained in the grain itself, where that moisture does not exist these ill results do not occur.

By the Georgia route, navigation from Paducah to the sea would be open the entire year, and would be closed to Saint Louis for only about ten weeks in the year.

I am justified, then, in saying, as I said in my report upon this route, that "while it enjoys every advantage possessed by the other routes, it is superior to them all in this, that it will never be obstructed by ice, will never be rendered impassible by drought, does not descend sufficiently low into the heated region to have its cargoes injured by heat or moisture, will require no rehandling of cargoes between the points of shipment and discharge," and I now add that the length of canalizing required in it will be one hundred and twenty miles less than the main line of the Erie Canal. The whole route will cost from three to four millions of dollars less than the main line of the Erie Canal enlarged, and will, by opening the Muscle Shoals, give an easy water-communication between the magnificently rich mineral regions of Eastern Tennessee and Northern Georgia and Alabama, and every point of the great Mississippi Valley, and by the canal connecting the Tennessee and the Coosa, will, in connection with the improvement of that river, open a clear water-way from the same region to the city of Mobile and the waters of the Gulf.

More than any other work undertaken within my memory, excepting the construction of the Pacific Railroad and the improvement of the Mississippi River, does this scheme appear to me to be of national importance, and the great States of Georgia, Alabama, and Tennessee will be unjust to themselves if they fail to make every effort in their power to secure its accomplishment.

Very respectfully, your obedient servant,

WALTER MCFARLAND,
Major of Engineers.

Gov. JAMES M. SMITH,
Atlanta, Ga.

By the CHAIRMAN:

Question. How much additional navigation would the improvement of the Muscle Shoals give to the Tennessee?

Answer. The Tennessee is navigable from there up to Chattanooga, and when the improvements which we now have in progress are completed, will be navigable up to Knoxville.

Question. What additional navigation would it give upon the rivers which you cut by this line? You have mentioned the Coosa. Are there any others?

Answer. No, sir.

By Mr. DAVIS:

Question. Going back to the Tennessee, how is the transportation now gotten by the shoals?

Answer. There is none. It does not pass up and down.

By the CHAIRMAN:

Question. That four hundred miles of navigation is useless?

Answer. It is not used except by flat-boats. Coal-merchants take their chances every now and then by sending down flats loaded with coal, and at high water vessels sometimes come down if there is any special use for them, and sometimes they come up.

By Mr. SHERMAN:

Question. Have they not a railroad near there?

Answer. Yes, sir; the Memphis and Charleston Road runs right along it. It is five or six miles from it.

By Mr. DAVIS:

Question. You spoke of coal; will this canal route go through the coal-field to any extent?

Answer. Not through it, but very near it. It is pretty near the coal-fields in Cahaba, Ala.; that is the nearest point. There are immense coal-fields in Eastern Tennessee, an immense amount of it. Chattanooga is about one hundred and forty miles from Gunter'sville, where the canal connecting the Tennessee and the Coosa would begin. We do not know much about those river distances, and cannot come within

fifteen or twenty miles, because, as I say, we have them only from the reports of steamboatmen, who estimate from the time of running.

Question. Were your observations sufficient to enable you to say that there would be no obstructions from ice?

Answer. There would be no obstruction in any part, excepting on the Mississippi. Even up as high as Chattanooga, we never get any ice to obstruct anything. Sometimes there is a thin film there, and those creeks on Sand Mountain sometimes have a thin film formed over them, but not enough to obstruct a boat.

By Mr. SHERMAN:

Question. Your statement about the Muscle Shoals surprises me on account of the immense fall. If that improvement was made around those shoals, is there any main obstruction in the navigation of the Tennessee River from Paducah to Chattanooga?

Answer. Yes, sir. The next most serious one below is Colbert Shoals, about seventeen miles below Florence. That we have been at work on for a year or so, and it is mentioned in my report. The cost of opening this route includes the cost of improving that shoal. The four millions applies to all the rivers.

Question. Is there any obstruction between Muscle Shoals and Chattanooga?

Answer. There are small affairs. The most serious, in the vicinity of Chattanooga, is what is known as the Suck.

Question. Are you improving by wing-dams?

Answer. Yes, sir; in most places. But there we are trying to increase the channels. It is where the river breaks through the mountains, and is very narrow. We are taking out the rock a little, and giving a smooth current, as well as we can.

Question. If those improvements were made on the river you would have navigation to Chattanooga and to Knoxville, and there are several railroads connecting from there to the different parts of the country?

Answer. Yes, sir.

Question. What are the railroad communications from Chattanooga?

Answer. The East Tennessee and Virginia—the Georgia Road running up to Bristol, Knoxville, and to Washington; and the Nashville Road, formerly the only through southern route from Louisville; the Alabama and Chattanooga running down to Meridian, and the Western Atlantic running here; also, the Memphis and Charleston Road, running to Memphis.

Question. If the Tennessee was improved around the Muscle Shoals, there would be water communication to Chattanooga, and railroad communication is already established to all parts of the South?

Answer. Yes, sir.

By Mr. NORWOOD:

Question. Then what improvement would be necessary to make it navigable up to Knoxville?

Answer. The improvements that are required are slight. They are nearly all reefs of limestone, that would have to be removed, or else wing-dams constructed to increase the depth of the water over them, and that we are now doing. We have done it as far as the money would permit.

By Mr. WEST:

Question. My knowledge of the Tennessee River is that in its commercial facilities it is one of the most unreliable of western rivers. Let

me ask you again how much water you have in the low-water seasons up to Florence and Tuscumbia, for instance, on the Tennessee?

Answer. The trouble, as I have stated, is at those bars or points such as Coalburt Shoals, where you cannot get more than 20 inches of water in the low-water season. The estimate I have made provides for giving three feet during that season. We cannot expect to get more than three feet at those times.

Question. On an average season you would get three feet, would you?

Answer. Yes, sir. I was going to say in any season, but of course there might be such a thing as an extraordinary drought.

Question. O, I have known the Tennessee closed for nine months, with not over 18 inches in it. How much water have you naturally in the Coosa River by this supposed route?

Answer. We will get the same depth, 3 feet. We carry $2\frac{1}{2}$ up now.

Question. Now, as to the Ocmulgee and Altamaha?

Answer. That stretch of the Ocmulgee between Macon and Hawkinsville I do not know anything about; but below that you can get 3 feet without any trouble, by cutting out the snags and trees, and moving some of the sand-bars formed by them. On the lower obstructions, the bars and shoals on the Tennessee, I have known them down at Big Bend to have only 23 inches; and the Coalburt Shoals, one season, less than 18 inches.

By the CHAIRMAN:

Question. I understand you to say that the four millions, or about that sum, was for the improvement of all the rivers, including the Ocmulgee and the Altamaha. What proportion of that sum for river improvement belongs to the Tennessee?

Mr. NORWOOD. I think he did not include the Ocmulgee, because he has not surveyed it.

The WITNESS. The estimate provided for a canal as far as Hawkinsville.

By the CHAIRMAN:

Question. Can you state what is your estimate of expense for improving the Tennessee upon your plan?

Answer. Do you mean so much of it as would be used by the canal? We have estimates for the whole river.

Question. Give it for improvement below the lower end of the Muscle Shoals?

Answer. Below the lower end of Muscle Shoals it would probably be about a half million dollars; for the Muscle Shoals about four millions of dollars, and from there up to Knoxville another half million, being five millions in all.

By Mr. SHERMAN:

Question. Are you familiar with the Cumberland?

Answer. No, sir; it has been recently placed in my charge. It is navigable now from the mouth up to Nashville. There is sometimes trouble at Harpeth Shoals and one or two other points.

Question. Have plans been prepared for their improvement?

Answer. Yes, sir; and I think the estimate would take about \$190,000.

Question. What is the volume of water in the Cumberland, compared with the Tennessee?

Answer. That I do not know. I never examined it.

Question. Is there any plan for the improvement of the Cumberland above Nashville?

Answer. Yes, sir; the civil assistant, Mr. Abert, made a survey of that last year, under General Weitzel, and there were two estimates furnished, one for improvement to admit of vessels drawing 3 feet, I think. I do not clearly recollect what that amount was. Then there was a scheme to improve it by lock and dam navigation away up to the mountains. That ran up to about \$4,000,000, I think.

Question. I am merely speaking of the wing-dams?

Answer. I do not recall what that estimate was; but it was somewhere within, I think, about three or four hundred thousand dollars. The survey and examination was made before I had anything to do with it.

Question. What is the extent of the navigation of the Ocmulgee River from Macon down? Are there many vessels upon it?

Answer. No, sir; there are very few; almost none, I should think. That is the case with the Tennessee. I do not think there are but two steamers plying on the Tennessee below Florence. I think perhaps there are two or three little steamers.

Question. I want the extent of navigation; the number of vessels traveling?

Answer. I think there are two or three steamers only, running between Savannah and Hawkinsville.

Question. How are the productions about Macon transported to market?

Mr. NORWOOD. They go by Central Railroad and the Macon and Brunswick Railroad.

The WITNESS. There is a good deal of flat-boat navigation. They carry a good deal from the plantations along the river.

By Mr. SHERMAN:

Question. I wish to get the extent of navigation on the river now in its present state, as near as you can get at it.

Answer. I do not think there is anything but merely local trade. I do not know, however; I cannot speak of that.

Mr. NORWOOD. There are steamers which run up there except for a short time during the year when there is low water. There is a good deal of cotton that comes down, which is tributary to the banks of the river.

The WITNESS. The cotton of Macon and that region goes to Savannah by rail.

Mr. NORWOOD. In the main it does. But from Hawkinsville it goes down by boat in part and also by rail. The navigation of the Ocmulgee is obstructed portions of the year by those sand-bars, which can be very easily removed.

By Mr. SHERMAN, (to the witness:)

Question. Is there any official report of the condition of the river that you know of?

Answer. No, sir; not that I know of. It has never been surveyed or examined officially, to my knowledge. The only way I could do was to get old steamboatmen and boatmen living along the bank, and collect as much information as possible from them.

Question. Has there ever been any survey of the Coosa River?

Answer. Yes, sir; over the obstacles from Wetumpka up to Greenport. That has been surveyed and estimated upon.

Question. Is that used?

Answer. No, sir; that portion is not. The Coosa is broken as the Tennessee is, at the Muscle Shoals. There is a fall of 204 feet there in the Coosa River in that distance.

Question. In what distance?

Answer. One hundred and thirty-five miles.

Question. You would have to have a canal, then, probably the whole distance of the one hundred and thirty-five miles?

Answer. No, sir; the pools are along there. There are long stretches of four or five miles, with water 50 and 60 feet deep. And then come the reefs of rock, with water tumbling down, may be in some places only a few yards, and some places half a mile, where lock and dam navigation would be required.

By the CHAIRMAN:

Question. The improvement of the Tennessee at a cost of \$5,000,000 is for the 3-foot navigation at low water?

Answer. Yes, sir; up to Knoxville.

By Mr. NORWOOD:

Question. What do you say is the fall of Muscle Shoals?

Answer. One hundred and thirty-four feet in thirty-eight miles.

By Mr. DAVIS:

Question. Around those shoals how much water do you calculate in your canal?

Answer. Six feet.

Question. Does coal now pass down the Tennessee to market?

Answer. Not below Chattanooga. There are no means to get out. They do not take any down now except for local purposes. Every now and then a coal-dealer will send down three or four flat-boat loads of coal, trusting to get one or two of them through the Muscle Shoals, which would amply repay him for the loss of the others.

Question. On the Lower Tennessee what do the iron furnaces use, coal or wood?

Answer. Wood. The furnaces on the Upper Tennessee use coal; but those on the lower, use charcoal, as do those in Northern Alabama.

By Mr. SHERMAN:

Question. Are you certain about the water in the Tennessee being equal to the volume of water in the Ohio?

Answer. No, sir; I cannot say I am certain about that.

Examination of A. J. McBRIDE.

By the CHAIRMAN:

Question. Are you well acquainted with the Ocmulgee River?

Answer. My knowledge of the river was obtained during the year 1866, in the summer and fall. I know nothing of it since that time.

Question. Please state in what way your knowledge was acquired and what you know of its capacity for navigation.

Answer. I was engaged in shipping cotton that year over the river. I sent eight or ten boats from Macon to Darien. That is between Brunswick and Savannah. You go through a sound down there—the name of it I forget—to reach Darien.

Question. State briefly what you know of its capacity for transportation.

Answer. I have been thinking about it recently, and there are three

points, I believe, in the river that during that year were partially obstructed. The first was about twelve miles above Hawkinsville, in Houston County. The obstruction there was tree-tops and trees. There was nothing like rocks. That was at the first bend of the river. Then, about fifty miles below Hawkinsville, and perhaps a little farther than that, and just below the mouth of the Ocomee, is a very narrow space where there are some rocks that I think partially obstructed navigation at that time. However, I think that that was not a serious objection, except in very low water. Then, at Decaturtown, the Federal troops, at the last of the war, put in some obstructions. I think they have been somewhat in the way of navigation. Those are all of the obstructions, I believe.

Question. Is there an abundant supply of water there?

Answer. Yes, sir; at both those last places I have mentioned there is an abundant supply. But the rocks somewhat obstruct navigation during the very low water, I believe. They have been running boats over the river all the time until within the last six months, up to Hawkinsville. They have had two boats: one named the Hardee, and one some other name, which I forget. But about six months ago, I think, they found it impossible to get over these obstructions put in by the Federal troops at Decaturtown. I think that is the most serious obstruction in the river now.

Question. But from your knowledge you would say there was no difficulty in obtaining an ample supply of water?

Answer. I think you could obtain 2 feet at any time. We were engaged in boating in the summer and fall of 1866, and I remember our boat drew about 20 to 21 inches. I think there is no difficulty now about 2 feet at any time in any part of the river—that is, from Macon down. I know nothing of the river above there at all.

By Mr. WEST:

Question. What was the condition of the river at that time; was it ordinarily low?

Answer. Yes, sir; our water-courses in September and October are at their lowest point. I believe that is a rule that obtains almost every year.

Question. So 24 inches of water, in your judgment, is the depth of that river in the ordinary season?

Answer. About 24 inches, I believe.

A BYSTANDER: I will take the liberty of saying that 1866 was one of the driest years we had in ten years.

Examination of Col. P. H. RAIFORD on the subject of the proposed land-locked channel along the shore of the Mexican Gulf, across the peninsula of Florida, and along the sea-board of the Atlantic.

Colonel RAIFORD:

Mr. CHAIRMAN: To elongate the western river system of navigation eastward from the Mississippi to the Atlantic Ocean, and westward to the Rio Grande, is a work easily within the skill of engineers.

Of the waters and shore-line from the Mississippi River to the Atlantic sea-board, where natural advantages indicate the route for such an improvement, and with which I am familiar, I beg to invite the careful attention of your committee, and its thoughtful consideration of the facts relating thereto, which I shall lay before you.

With the view of connecting by an inland passage the Mississippi River with the harbors of Mississippi Sound and Mobile Bay, the Sen-

ate of the United States, on the 11th of March, 1867, directed that information should be obtained as to the cost of opening a channel between that river and Lake Pontchartrain, "of sufficient capacity for first-class steamboat navigation." On the 25th of January following, the Secretary of War sent to the Senate his report of surveys and estimates made on the subject by officers of the Engineer Department of the Army. This report shows that two routes were examined, one by the way of Bayou Manchac, the Amite River, and Lake Maurepas—an old channel filled up by General Jackson during his defense of New Orleans in 1815; the other from near Carrollton, on the Mississippi River direct to Lake Pontchartrain; the latter route being recommended by the engineer officer who made the survey as the shortest, cheapest, and best. Its estimated cost, including locks, flood-gates, and machinery, is placed at \$785,936.

With this short and inexpensive connection made between the Mississippi and Lake Pontchartrain, the continuation of an almost direct inland channel to harbors of the Atlantic Ocean will be a work of easy and cheap accomplishment; all of the entire route, with the exception of less than forty miles, would be through tidal waters and natural water courses. The short opening to connect the Mississippi with Lake Pontchartrain will perfect a land-locked passage as far eastward as Bon Secour—an arm of Mobile Bay—one hundred and seventy-four miles from the Mississippi, in an almost direct line toward the nearest point on the Atlantic coast. From Bon Secour to the bay of Saint Marks, in Florida, the distance is two hundred and twenty miles; between which points, parallel with and near the Gulf shore, there is a succession of land-locked sounds, bays, and lagoons, all tidal, which, in the aggregate, make a water line one hundred and ninety miles in length, leaving to be opened by a few short cuts, through sea-marsh and low ground, only about thirty miles of canalizing to complete a channel from the Mississippi to Saint Marks, three hundred and eighty-four miles long, as shown by the map before you. The sheets of water to be utilized in creating this portion of the proposed water-road, are those of Lake Pontchartrain, the Mississippi Sound, Mobile and Bon Secour bays, Perdido and Pensacola bays, Santa Rosa Sound, the bays of Choctahatchee and Saint Andrews, Searey's River and Lake Winuco, Apalachicola Bay, Saint George's Sound, Crooked River, and the Ocklockonce, and Shallow Bay, thence in a line due east from Saint Marks, to a point on the Finnhaw River, distant about forty miles, the channel would continue through marsh-land and tide-waters near the Gulf shore.

From the Finnhaw to the point of intersection with the Suwannee River the distance is thirty miles, no portion of which will require a deeper cut than from 10 to 16 feet to make a depth of water sufficient for the largest boats and barges of the western rivers. Fed, as would be the whole line of channel, from the Mississippi to the Suwannee, four hundred and sixty-five miles, by water on a level with the surface of the Gulf, and made by a total cutting of less than ninety miles with the use only of dredging machinery, shows how little labor and money need be expended to connect the navigation of the Mississippi River and its tributaries, as well as all intervening rivers flowing into the Gulf, with that of the Suwannee. Then, to ascend the Suwannee by three or four slack-water dams, about sixty miles above the point where the artificial channel from the west would reach it, will leave but thirty odd miles of canalizing between the Suwannee and the Saint Mary's River, to perfect this line of navigation from the Mississippi to the natural inland channel behind the sea-islands of Florida, Georgia, and South Carolina, and to

touch the harbors of Saint Mary's, Fernandina, Brunswick, Savannah, Port Royal, and Charleston, in the States named. The only section, as shown on the map, along the whole line of this proposed artificial channel, which would be above tide water, or the surface of the rivers to be used as parts of the line, is the intervening thirty-odd miles from the Suwannee to the Saint Mary's River, and between these streams, where the cutting would be done, lies the great Okefinokee Basin, giving rise to both and possessing an abundant capacity to feed the opening, when made, to connect them for navigation; the cutting here through sand with clay subsoil will require a summit for the canal bed of only 30 feet, with a maximum cut of 25 feet, and an average cut of less than 15 feet.

To reach the surface of the water in this summit-opening from the Suwannee side, not more than three locks will be required, nor more than four in descending to the level of the Saint Mary's River on the other. Thus it will be seen how little nature has left undone toward the perfection of a channel that would, for all the purposes of commerce, turn the Mississippi and its tributaries, and all intermediate rivers, into several of the best harbors on the Atlantic seaboard, and save to the producers and to the commerce of the Western and the Gulf States eight hundred miles in distance, and all the dangers of the Florida-reef passage which now lies between them and the world's greatest commercial ocean.

The first grand feature of this enterprise is that, by its accomplishment, all the rivers of the Mississippi Valley, and all of those which flow into the Gulf of Mexico on either side of it, from the Rio Grand—if made, as it should be, so far west—to its outlet on the Atlantic coast, will be made for purposes of domestic commerce, simply as one; that, from any city or landing on the route of this more than thirty thousand miles of navigable water-courses, steam-tugs and barges may embark with full cargoes, destined to any other of the thousand places lying upon the banks of this unrivaled system of connected water-lines, or they may pass out to harbors of the broad Atlantic to meet the ships of our coasting-trade, or those which come from distant countries in quest of commodities which, by such an improvement, may be so easily and cheaply gathered there. This work should contemplate a free and untrammelled ingress and egress of steam-barge lines, or any other character of river-craft, from the remotest points of navigation in the western valleys to harbors on the Atlantic coast, without touching the sea, without stoppage, intermediate agencies, taxation, or tolls of any sort. For domestic commercial intercourse, when so perfected, the reach of this system of interior lines of navigation will cover an area of more than two thousand miles square, including the richest valleys and every variety of production known to this country; and to do all this the cost will not exceed twelve to fifteen millions of dollars. What the practical effects of such a cut-off from the Western rivers to the Atlantic will be is shown by the influences of other works which have been made to shorten distances, save dangers, and reduce the carrying cost of commerce in other countries. In every instance where these advantages have been obtained by artificial works the course of trade has been turned through them.

If grain can be carried profitably from Saint Louis to New Orleans, twelve hundred miles, by the river, at 7 cents per bushel, and other bulky commodities at like rates, as has been practically demonstrated, it certainly may be carried five hundred and sixty-five miles further through the same character of navigation, and in the same bottoms to

the Atlantic Ocean, at a cost not exceeding 10½ cents per bushel. In this connection it should be borne in mind that this channel is proposed to be made, at all points and in every respect, as capacious as are the Western rivers themselves, and therefore would be as cheaply and as rapidly traversed by the boats employed on them.

It is a foregone conclusion, ground into the minds of western producers and western commercial men by the logic of experience, that the minimum of transportation cost from the western valleys to Atlantic harbors can never be reached until there is an unbroken and an unimpeded capacious and untaxed water-line from the rivers of that section to this ocean; and it is equally as well understood by all intelligent persons who have studied the question, that it is not within the scope of engineering power to make such channels, other than along the lake scope of the northern States, or through the sounds, lakes, estuaries, and rivers, which lie along the Mexican Gulf coast, and bisect the peninsula of Florida.

The embryo scheme of many years ago, to cut a canal across the peninsula of Florida, had for its object the shorter and safer passage for ships from the Atlantic to the mouths of the many rivers flowing into the Gulf of Mexico. The plan, as now proposed, is altogether different and is intended to elongate, as stated, the navigation of those rivers to the Atlantic, and thus perfect in a cheaper and better way the intended purposes of the older proposition.

In many ways, the elongation of the inland system to harbors of the Atlantic possesses advantages over a canal for sea-going ships across the peninsula, if even a sufficiently deep harbor on the Gulf side could have been formed for the entrance of such vessels. In the first place, the cost of a ship canal of 20 feet depth would have been vastly more, mile for mile, than the shallower digging of 6 or 8 feet, required for the boats of the Mississippi and its tributaries; and then the aggregate length of cutting on the inland channel would be no longer than would have been necessary for an opening across the peninsula, if such a work had been practicable; within a few miles of the southern extremity of the Okefinokee Basin arises the back bone ridge of the peninsula of Florida, and continues south some two hundred and eighty miles to the everglades, with elevations varying from 120 to 237 feet above the level of the sea, and on which for canalizing purposes but a limited supply of water can be had, while over the river-elongating route, as I have described it, the line would be wholly tidal, or along natural and sufficient water courses, except as before pointed out, the thirty odd miles through the plateau of the Okefinokee, and here lies a level plain and natural basin of three thousand square miles to supply all the water that would be needed to keep a canal over this short section full. The rain fall of this heavily timbered, yellow pine region is greater than that of any other portion of the United States, except Alaska; here, during the spring months the fall of rain is from 10 to 12 inches; during the three summer months, when the loss by evaporation is the greatest, the fall is from 23 to 25 inches; during the autumn, from 10 to 12 inches, and in the winter, from 8 to 10 inches, making an annual average rainfall of 35 inches of water.

To your inquiry, whether the cuts proposed to be made to connect the tide-basins and estuaries along the Gulf and Atlantic shores would be permanent, I need only point out to the committee a few works, long in use, of precisely the same character of those which will be required, at points along the line of the land-locked route, and show how they have stood. "Grant's Pass," through a sand-bank and oyster-reef, be-

tween Mobile Bay and Mississippi Sound, was cut more than thirty years ago, and has, from that time to the present, continued in use, without other than the first dredging. About the same period, a cut was also made through a neck of sea-marsh, between Cumberland and Nassau Sounds, on the Florida-Atlantic coast, for the purpose of perfecting an altogether inland route of navigation from Savannah to the Saint John's River of Florida; this opening was originally made only 40 feet wide, and 4 feet deep, but has since enlarged, simply by the ebb and flow of the tides, and by the passage of boats through it, to a width of over 100 feet, and to a depth of from 12 to 14 feet, proving that, when opened, these connecting channels between tide-basins are as permanent as those naturally existing, and that they have a tendency to deepen to the depth of the water at their ends. Another artificial channel, three miles long, to connect the Darien and Altamaha Rivers on the coast of Georgia, made under the direction of General Oglethorpe, more than a hundred years ago, for the use of small boats, but now employed for the passage of our largest river steamers, may be mentioned as proof of the permanency of such works.

In corroboration of the statements I have made relative to the inner waters of the Gulf and Atlantic coast-line, which would form much the greater portion of this proposed land-locked water-road, and in regard to the elevations along the central ridge of the Florida peninsula, as well as to the plateau north of its upper end, I have alluded to, as the route of the proposed work, I beg to refer the committee to the maps and reports of the United States Coast-Survey service, and to the hydrographical and topographical surveys made by engineer officers of the Government through this section, which are on file in the Departments of Washington City; and with special reference to what I have said in regard to the Okeefinokee basin, and its water-supply, you are respectfully referred to the report and survey by Lieutenant Hunter, made in 1857, under an act of the State of Georgia, and now on file among the archives of this State.

This proposed work, with its feasibility and great value, indorsed and recommended by many of the most eminent engineers of this country, is not now nor has it previously been brought to the attention of Congress, in the interest of any particular State or section, nor in that of individuals or corporations seeking aid and subsidies from the Government. Simply upon the superior merits of the plan to accomplish the great object of cheap transportation between the Western States and the Atlantic sea-board, it is now brought to the attention of your committee, specially appointed to investigate such subjects, with the hope that it will be carried by you to the attention of our national legislature, so that, before determining in favor of other works, having the same object in view, that body shall thoroughly understand the merits of this. If skillful investigations shall show, as they undoubtedly will, that a corrivation of all the rivers which flow through the States into the Gulf of Mexico can be formed and carried land-locked and unbroken through an almost direct line to harbors of the Atlantic Ocean, no question will remain in the minds of disinterested legislators as to the cheapest, quickest, and most efficient water-road that can possibly be made between the western valleys and the Atlantic Ocean, nor as to the one that can be accomplished in the shortest space of time, and give the earliest relief to the embargoed West.

Nothing could have shown more watchfulness on the part of President Grant over the producing interest of the country or over its preparations for defense against a maritime power in case of war, than his

recommendation to Congress to look to a land-locked and coast-line water-way as the means of protecting both.

Made, as it may be within a single year, wide enough and deep enough for the rapid transit of any boats employed on the western rivers and at less cost than would be required to build a cordon of fortifications necessary to protect the inlets of our southern sea-coast now exposed, and which would be better protected by floating batteries, moving quickly to points of attack, this free water-road will solve the problem in this country of cheap transportation and national defense; and all at a cost which will not exceed twelve or fifteen millions of dollars.

Examination of THOMAS E. WALKER, general claim-agent of the Green Line Transportation Company.

Mr. WALKER. Mr. Chairman, we have but two officers. The other is the general agent.

By the CHAIRMAN:

Question. What are the duties of the claim-agent?

Answer. The settlement of all claims which may arise against the line, and a thorough understanding of the rates of freights and so on.

Question. Please state over what roads the Green Line operates, giving distances and termini.

Answer. First, the Louisville, Nashville and Great Southern, one one hundred and eighty-five miles, starting from Louisville and reaching to Nashville; the Nashville and Chattanooga, reaching from Nashville to Chattanooga, one hundred and fifty-one miles; the Western and Atlantic, one hundred and thirty-eight miles, reaching from Chattanooga to Atlanta; the Georgia, reaching from Atlanta to Augusta, one hundred and seventy-one miles; the Port Royal, reaching from Augusta to Port Royal, which I have not the exact mileage of—it is something over a hundred miles; the Charleston and Savannah, from Savannah to Charleston, I think, is about one hundred and twelve miles in length. Those are recently in, and I have not the exact mileage. Also, the South Carolina, reaching from Augusta to Charleston, one hundred and thirty-eight miles; the Charlotte, Columbia and Augusta, reaching from Augusta to Columbia, one hundred miles; the Wilmington, Columbia and Augusta, from Columbia to Wilmington, about one hundred and eighty-five miles; the Macon and Western, from Atlanta to Macon, one hundred miles; Macon and Brunswick, from Macon to Jessup, one hundred and ninety-six miles; the Atlantic and Gulf, from Savannah to Live Oak, the distance I do not exactly know—it is about one hundred and eighty miles; the Georgia Central, from Monroe to Savannah, one hundred and ninety-one miles; the Atlanta and West Point, from Atlanta to West Point, eighty-seven miles; the Western, from West Point to Montgomery, eighty-seven miles; the Southwestern, from Macon to Eufaula, one hundred and thirty-eight miles; the Saint Louis and Iron Mountain, from Saint Louis to Union City, two hundred and fifteen miles, as we count it; the Nashville and Northwestern, from Union City to Nashville, one hundred and eighty-five miles; the Saint Louis and Southeastern, from Saint Louis to Nashville; the exact mileage of that road I do not recollect; it is something over two hundred miles; the Selma, Rome and Dalton, from Dalton to Selma, one hundred and ninety miles; the Atlanta and Richmond road, from Atlanta to Charlotte, two hundred and sixty-eight miles.

Question. Are there any other freight lines of the same character in the Southern States?

Answer. Yes, sir; there is a line from New Orleans to Atlanta, known as the Mobile and New Orleans line. There is a line by the way of Charleston, a sea-board line, called the Great Southern Fast-freight Line. There is the White Line, the Union Line, &c. The one by Charleston, as I say, is called the Great Southern Fast-freight Line. The other, I think, is the Crescent Line; Mobile and New Orleans, from New Orleans to Atlanta, and on to Augusta and Charleston.

Question. Do you know of any others in the Southern States?

Answer. I do not.

Question. Do any of those lines run over the same railroads with your lines?

Answer. Yes, sir.

Question. Over portions of the same; not over the entire route?

Answer. No, sir. The New Orleans runs over two roads that are in the Green Line. The Great Southern Fast freight Line passes over two roads of the Green Line.

Question. Are they owned by the same interests?

Answer. Perhaps I had better explain that the Green Line is not a corporation; it is a combination of roads.

Question. Is the other line you speak of running over a portion of the roads you occupy owned by the same combination?

Answer. No, sir; it is owned by the different corporations. It is a combination of roads.

Question. It is not in the same combination with yours?

Answer. No, sir.

Question. State the principle upon which that combination is formed.

Answer. These roads meet in convention and agree to furnish a quota of cars, which is based on the amount of revenue derived from the business over each road. The calculation is made upon that, and each road furnishes a quota of cars. They agree to pay so much mileage per mile or per car for these cars.

By Mr. NORWOOD:

Question. When you say revenue, you mean gross income, do you not?

Answer. Yes, sir; derived from these freights from the West. They agree to furnish this quota of cars. Upon them they agree to pay the mileage of a cent and a half, or two cents, or whatever it may be. They establish an office, and daily reports are made of the transmission of cars. At the end of the month the mileage statement is made out.

Question. Where is that office?

Answer. It is in Atlanta.

By the CHAIRMAN:

Question. Is the same mileage charged on all the roads?

Answer. Yes, sir; it is fixed by the convention of officers.

Question. What is that mileage where the cars of one road run over another road?

Answer. Last year it was a cent and a half. A recent rule fixed it from November 1 to April 1 at 2 cents per car per mile.

Question. Are all of the cars of the Green Line owned in that way by the several railroads?

Answer. Yes, sir.

Question. And all in the proportions of the revenue derived from each separate road?

Answer. Yes, sir; their quotas are based on revenue.

By Mr. DAVIS:

Question. Do I understand you per car per mile, or per ton per mile?
Answer. Per car per mile; that is, for the rental or mileage.

Question. For the use of the car?

Answer. Yes, sir.

By Mr. CONOVER:

Question. Is the quota based on the revenue derived from freight, or freight and passengers combined?

Answer. From freight alone, and that is through freight. Local freights are not included in the combination.

By the CHAIRMAN:

Question. Does your line carry local freight also?

Answer. No, sir; the individual roads look after that. They have what are known as private cars, not entering into these quotas.

Question. Do the cars which embrace this combination carry local freights at all?

Answer. Only from certain points; that is, from iron-furnaces for west-bound freight. We are returning all cars empty to the West, and, in order to secure business, stop them at the iron-furnaces and load up at low rates.

Question. When they do carry local freights, how is it arranged?

Answer. That is counted; but, ordinarily, what is known as regular local business is not much.

Question. You say a large number of your cars return empty?

Answer. Yes, sir; I suppose four-fifths of them.

Question. What is the freighting from the West?

Answer. Mostly produce; what is known as fourth and fifth class—heavy articles—bacon, flour, hay, corn, &c.

Question. What proportion would you say that the eastern-bound freight bears to the western?

Answer. Do you mean what we call south-bound or west-bound?

Question. Yes, sir?

Answer. I do not suppose that the west-bound business is one-fifth as great.

Question. So that five cars out of six would go back empty?

Answer. Yes, sir.

Question. What is the difference between the charges on your line of fourth-class freight and the cars outside owned by the several roads? How do your charges compare with the charges upon roads not in the combination?

Answer. I hardly know how to answer that, for all of the leading roads to the West are in this combination.

Question. And there is no through freight except what is brought by them?

Answer. No, sir.

By Mr. CONOVER:

Question. Is a cargo of freight shipped from the West here necessarily sent by the Green Line?

Answer. It is for this direction. There is only one other line, opened last year, the south and north road of Alabama, reaching around to Montgomery. By that we lost a very heavy amount of tonnage. They would have to come around up to Atlanta, which would make a long circuit.

Question. There are no through freights shipped from the West to this section except by the Green Line?

Answer. It is all regarded as Green Line freight.

By the CHAIRMAN:

Question. Do you prorate with any water line?

Answer. No, sir; they generally fix what is known as an arbitrary. They exact their own rates, and we have to add that to ours.

Question. You have no running arrangement with them?

Answer. We have arrangements by which we protect their through bills—bills guaranteed by them; but we have no regular system of tariffs or prorate. They are generally known with us as arbitrary.

Question. Can you state the whole number of cars in your combination?

Answer. Mr. Robinson will be able to give you the actual number. The last quota called for fixes it at 2,250. They are not all finished and in running order. That is the maximum number.

Question. What are your charges from Louisville here?

Answer. Nearly all of our business consists of fourth and fifth classes, with a few specials.

Question. What do you include in fifth class?

Answer. All grain. Fourth class is bacon, lard, &c.

Question. The fifth class, then, corresponds to the fourth class on the eastern roads?

Answer. I think it does.

Question. You mean, however, by your fifth class, grain?

Answer. Yes, sir; we ship all grain on what is known as fifth class, and all bacon, lard, &c., fourth class. From Louisville to Atlanta fourth class is 68 cents a hundred. That is five hundred and eighty-one miles. Fifth class is 51 cents.

Question. What is it from Saint Louis here?

Answer. Saint Louis and Cincinnati are the same. Fourth class is 84, and fifth class 63 cents. The mileage is six hundred and eighty-five miles.

Question. How do your prices differ year by year? How do they compare this year with the two or three years previous?

Answer. Our tariffs at the present time are about the same as they were this time last year. Our summer tariffs are always less.

Question. Why do you make your summer tariffs less than you do your winter tariffs?

Answer. The competition is stronger.

Question. There is no more difficulty in running here in the winter than there is in the summer, I suppose?

Answer. Very little; the time is a little longer.

Question. What are your tariffs on fourth and fifth class freight from here to Savannah?

Answer. We do not work from here. Our tariffs are all based from what we call initial points in the West. It becomes a question with the roads from here to Savannah. That is what we call a local question. Their tariffs are generally per mile higher than ours.

Question. From Louisville or Cincinnati to Savannah, state the rates, with the distances.

Answer. From Louisville to Savannah, seven hundred and seventy-nine miles. I have not the rates here, but can furnish them.

By Mr. DAVIS:

Question. Will you restate the distance from Louisville to this place?

Answer. It is four hundred and seventy-four miles from Louisville to Atlanta.

By Mr. NORWOOD:

Question. What do you give as the distance from Louisville to Savannah?

Answer. Seven hundred and seventy-nine miles.

Question. What is the distance from here to Savannah?

Answer. It is two hundred and ninety-four miles.

By the CHAIRMAN:

Question. Have you any means of giving us the local charges on the roads from here to Savannah and from here to Macon?

Answer. No, sir; I have not them in my possession. They could be obtained from the different offices very easily.

By Mr. CONOVER:

Question. What is the time required to transport through freight between Saint Louis and this city or Savannah?

Answer. Without a very heavy press of business, we sometimes make deliveries of freight here the fifth or sixth day after receiving a bill of lading. It is sometimes ten and twelve days during a very heavy press. It is about the same time from Louisville. Some weeks it will come through in five or six days. It is owing to the condition of the line.

By the CHAIRMAN:

Question. What would you call average time?

Answer. I should suppose about six or seven days; that is, as that line is worked now. They could perfect it, and make it much quicker.

By Mr. NORWOOD:

Question. Can you state your average distance per hour?

Answer. I think the through trains make about eleven or twelve miles an hour on the average.

Question. When you bring freight from Louisville here you call that through freight?

Answer. Yes, sir.

Question. As much so as if you carried to the sea-board?

Answer. Yes, sir.

Question. Does the same ratio of rates hold between freights between the two points I have named, from Louisville to Atlanta or Louisville to Charleston?

Answer. No, sir.

Question. What discrimination do you make?

Answer. There is a considerable difference. The rates to Charleston and Savannah are regulated by the competition by water. They fix the rate on what is known as the Baltimore line at Cincinnati and Saint Louis to this point, and we have to work to it, no matter what it is, even if it is 40 cents a hundred; and hence frequently the Charleston and Savannah rates are as low as on the Atlanta road.

Question. That is to say, frequently you carry for the same amount to Charleston that you do to Atlanta?

Answer. Yes, sir; with few cents difference.

Question. How do you manage where you take your freights at a point where there is no water competition; say, for instance, from Nashville to Atlanta and from Nashville to Charleston? How do you regulate those rates?

Answer. Well, sir, we generally get a better figure out of such rates.

Question. Your rate to Charleston is proportionately lower, is it not, taking the distance into consideration?

Answer. Yes, sir.

Question. What ratio would that be?

Answer. I could not tell you exactly, without some data or making some calculation. I have never directed my attention specially to that. I have known that it has existed. I have known generally the reason why. Greater difference exists in the Cincinnati and Chicago rates than in the Nashville point, where there is no competition existing. But where the Chesapeake and Ohio line or Baltimore line fixes a rate, we have to work to it, or pass out and relinquish the field to them and do no business. We have been getting a very good west-bound business from Charleston to Savannah, and we do not see proper to cease all efforts to do a south-bound business. We work very low to Charleston and Savannah sometimes to get good freights back.

Question. How do your rates from the sea-board to the interior compare with your rates on south-bound freights to the sea-board?

Answer. We have no rates to the sea-board from any points, except Green Line points in the West. That is a matter held by the different roads. For instance, the South Carolina and Georgia Road make the rate to Atlanta on all goods from Charleston to Atlanta, and the same to Chattanooga. We do not interfere with that. It is only on the western-bound shipments to Cincinnati, Louisville, Saint Louis, Chicago, Nashville, and so on.

By the CHAIRMAN:

Question. How do your west-bound freights to a Green Line point compare with the others?

Answer. Much lower. We have done that in order to stimulate the business and build it up. We have been willing to carry freights west-bound almost for the mileage, just paying the rental of the cars in order to stimulate. We have been giving these iron-furnaces very low rates. We have been giving lumber and the naval stores, and rice and goods of that character very low rates, in order to stimulate the business and build up a trade between the two sections.

Question. There are cars, however, are there not, running on all these local roads which do not belong to your line at all?

Answer. Certainly; a great many cars. For instance, the Western and Atlantic Road, I suppose, own six or seven hundred cars. They only contribute to the line two hundred and fifty cars. I suppose the Louisville and Nashville own over a thousand cars, and they contribute some two hundred.

By Mr. WEST:

Question. If a mercantile house is doing business in Atlanta, and desires to import from Saint Louis 500 barrels of flour, must they resort to your line for transportation?

Answer. There is no other line leading from the West to this point without making a long circuit around by Montgomery, or down the Mississippi river, and thence to Montgomery. There have been a good many shipments made by New Orleans and Atlanta of corn when the river was up and barge-rates were very low?

Question. Do I understand that the two cents per car per mile is for the use of the car?

Answer. Yes, sir; the rental.

Question. And the rates you have specified to us are the rates that the importer here pays on his flour?

Answer. Yes, sir.

Question. What do you class flour at?

Answer. We have a special rate on that. We have what is called a barrel-rate.

Question. What is the barrel-rate from Saint Louis to Atlanta?

Answer. One dollar and twenty-seven cents.

Question. When these railroad companies meet in convention with a view to fix the rate, what is the principle which controls them—possible competition with other routes?

Answer. That generally fixes the rate. I suppose the general principle is to get a reasonable paying rate out of the business, if possible. If competition prevents, they work for cost for the time being until they can improve it.

Question. For instance, from Saint Louis to Savannah you are competed with by the Baltimore and Ohio Railroad and ocean transportation to Savannah, are you?

Answer. Yes, sir; at Charleston, and even up to Augusta now, we have competition by this new Chesapeake and Ohio Line, opened last year.

Question. Where does it embark its products; at Norfolk?

Answer. No, sir; they come across on the Chesapeake and Ohio, through West Virginia.

Question. They do not use ocean transportation?

Answer. No, sir.

Question. Does the Baltimore and Ohio use ocean transportation?

Answer. Yes, sir.

Question. By steamship line?

Answer. Yes, sir.

Question. How much does it cost to bring a barrel of flour by the Baltimore and Ohio and steamship lines, as compared with your lines?

Answer. We generally make our rates the same. The figures I cannot give you to-night.

Question. But they are lower in consequence of that competition?

Answer. Our rates are lower than they would be; but they are not lower than the Baltimore rate. They are generally the same. They fix a rate, and, in railroad parlance, we work to it. If it is 20 cents a barrel we work to it, and are obliged to do so or quit the business.

By Mr. DAVIS:

Question. Does your grain come in bulk or sacks?

Answer. Both ways. We bring a great deal in bulk.

Question. Do you make any difference in the charge?

Answer. No, sir; we charge the same rate. It really costs more to transport grain in bulk, because it detains the cars. We have not elevators and chutes for unloading so promptly; still, we do it for the accommodation of the public.

Question. What does it cost at the sea-port to ship grain from the car to the vessel; say at Savannah or Charleston.

Answer. I do not know what their wharfage rates are. At Port Royal they have no extra charge now. They load right from the car into the steamer, and from the steamer into the car. The track runs right alongside of the wharf. It is thought that ultimately most of the bulk-grain business will be done over that line.

Question. I suppose the owner of the line pays for the use of the car.

The owner of the grain has nothing to do with the payment of the car.

Answer. No, sir.

Question. Do all the companies composing the line get exactly the same rate per mile?

Answer. Yes, sir; exactly.

Question. Does what is known as the Mahone system of roads and the Southern line, the Pennsylvania line, work together in prorating?

Answer. Yes, sir; wherever we reach a line of that kind. There is only one line in our combination that is controlled by the security company, the Atlantic and Richmond. They prorate with us very freely.

Question. What combination controls the road that you work over principally?

Answer. They are mostly stock companies. One is a leased road—three are leased roads.

Question. What is the usual capacity of a car?

Answer. The old cars were rated at eight tons. We are now building all of our cars at ten tons.

Question. Is the gauge the same from the sea-port to Cincinnati or Louisville?

Answer. It is to Louisville and Saint Louis, but not to Cincinnati. The gauge breaks at Louisville, over what is known as the short line.

Question. What is the gauge in the Southern States generally.

Answer. Five feet. I think North it is four feet nine or four feet eight and a half. It is universally five feet in the South, with the exception of a little road in North Carolina from Greensport.

By Mr. CONOVER:

Question. When did that Green Line begin?

Answer. In 1869, I believe.

Question. Were not the rates of freight higher before that combination or organization than they are now?

Answer. The rates were much higher than they are now.

Question. Did not that force competition on the part of the Baltimore and Ohio Railroad—that Green Line?

Answer. I do not know. Perhaps it might have stimulated it.

Question. Do you know how much higher the rates formerly were?

Answer. I could not say from memory.

Question. I mean, did not that force the Baltimore and Ohio Road, or the companies which now compete with you, to reduce their rates of freight? Did that combination affect that matter in any way?

Answer. I should think it did.

Question. Have they reduced also their rates since that time?

Answer. Yes, sir; they cut our rates frequently.

Question. They have reduced their own since that combination?

Answer. Yes, sir. The Chesapeake and Ohio Line has recently cut our rates at Cincinnati. Whenever they cut our rates we have to come to them as a matter of course.

Question. Did you say the charge was the same from Cincinnati here and Saint Louis?

Answer. Yes, sir.

Question. Is not there some difference in length?

Answer. It is five hundred and eighty-one miles from Cincinnati to Atlanta, and from Saint Louis it is six hundred and eighty-five miles. There is one hundred and four miles of difference.

Examination of R. C. ROBSON.

By the CHAIRMAN:

Question. Please state your business.

Answer. I am general agent of the Green Line. My business, though I am called general agent, is purely with the car service. Mr. Walker has already explained to you, I believe, the character of the line. My business is to keep an exchange of the mileage made by all the cars in the line. In making up the statement connected with our business, I am informed every month of the amount of revenue which each road derives in the gross from the Green Line business proper. I can only give the committee how much has been earned and how much business has been done in the Green Line proper; that is, north and south—what comes from the West, all over these eighteen, or twenty, or twenty-one roads that we have, and what goes back to them each month. Thinking, perhaps, that you might wish to have that information, I have appended a little table, which I will here submit to you:

The gross Green Line revenue for twelve months, from November, 1872, to October, 1873.

	South bound.	North bound.	Total.
1872.			
November.....	\$186,784 87	\$26,655 74	\$213,440 61
December.....	169,817 09	18,970 72	188,787 81
1873.			
January.....	218,069 19	28,757 03	246,826 22
February.....	188,472 12	26,564 64	215,036 76
March.....	341,281 88	29,216 26	370,498 14
April.....	210,741 67	29,927 09	240,668 76
May.....	115,064 90	23,225 49	138,290 39
June.....	120,923 36	17,735 89	138,659 25
July.....	138,635 66	14,689 34	153,325 00
August.....	166,335 64	20,960 54	187,296 18
September.....	144,046 03	24,963 20	169,009 23
October.....	122,270 69	24,310 48	146,581 17
Total.....	2,122,443 70	285,976 51	2,408,420 21

That is the business for twelve months.

By Mr. WEST:

Question. I see you have eighteen lines here?

Answer. Yes, sir; there are a few more, which have been recently admitted. Their business is small.

Question. But the eighteen lines named at the head of this circular have earned these amounts?

Answer. Yes, sir; the aggregate is \$2,122,443.70. That is south. That is what comes from the West, of Green Line receipts all over the various roads south. The other table is what goes back, or eastern freights, \$285,976.51. Now, I keep an estimate of the number of miles made in this service. I have not been very careful, but I had certain results to obtain, and I do not include some things which really are relevant to my business; but I have figured at it constantly for the sake of getting up some information for my own gratification. You will find the gross revenue for twelve months amounts to two million. That averages, then, \$200,000 a month—the gross business going south and north. Taking that, I find that, after watching these lines now after the last four or five years, the line really makes but 10½ to 11 cents per mile per car. A railroad man, Mr. Finck, one of the ablest in this country, has figured that thing a great deal, and I

have talked with him about it. He figures that it costs from $7\frac{3}{4}$ to 9. He puts it down that it costs 9.75 to carry freight per mile. I notice that our Green-Line revenue does not realize more than about $10\frac{1}{2}$ and 11 cents. I have not, as I say, been very careful with these figures, because it was not necessary that I should do so; and the nature of our exchange has been so that I could not tell you. Sometimes we have been compelled to transfer, and did not carry cars really all the way through. My observations have shown me that the revenue derived from this business only amounts to, say, 12 cents, to be safe. That is about $1\frac{1}{2}$ cents per ton per mile, and it would really show that, out of \$2,000,000, which we have in this line, it has cost the Green Line, if those figures of Mr. Finck are correct, that the Green Line hardly makes a living out of this business.

Question. Do you know the total amount of mileage for that year?

Answer. Yes, sir; It amounts to about eighteen million miles—between eighteen and twenty millions.

By Mr. DAVIS:

Question. Do you know what per cent. the use of the car pays to the car owners?

Answer. In the mileage do you mean? I have worked and figured at it a good deal. We allow each other $1\frac{1}{2}$ cents part of the year. From the 1st of April to the 1st of November we allow $1\frac{1}{2}$ cents a mile all the way, loaded or empty; and from November until April we allow 2 cents; but we have been charging $1\frac{1}{2}$ cents a mile, and I used to think it very profitable. When I first commenced I watched each car. I keep the actual mileage which every car makes in the Green Line. Sometimes a car makes two thousand five hundred miles a month, and sometimes it will not make a thousand. Then the dull season comes on, and we are locked up, and statistics don't avail much, because we never could side-track a sufficient number of cars to make it equalize itself.

Question. Don't you pay dividends?

Answer. No, sir; I do not know whether anybody can understand our line. It is a myth. It is not a stock company. It is a big thing, and runs all over creation in this part of the world. But there is no stock, and no dividends are paid to anybody. It is carried on as if we had no Green Line, and it is intended for the exchange of cars instead of transferring freight.

Question. Who builds your cars and keeps them in order?

Answer. They are built by the roads themselves. Sometimes they buy from different parties.

Question. Each road puts in its cars according to the number of miles?

Answer. Yes, sir; that is the theory, and that is the fact.

Question. Who keeps those cars in order?

Answer. They are kept in order by each road, and the necessary and proper expense of wear and tear charged to the owner of the car.

Question. Whatever railroad repairs a car it charges it up?

Answer. Yes, sir; if it breaks one of its own cars up, and it is its own fault, it must rebuild it. The cars are delivered to the line in good condition, and if the Georgia Road should run a car off the track and break it up by bad or defective track, it pays for it.

Question. How do you know whether it is the fault of the road or the fault of the car?

Answer. We have had more fun about that than you ever saw in your life, and it has nearly driven me distracted. I have exhausted all

the rhetoric I am capable of on that subject. But we finally got together, and we all had a love-feast, and declared we would do right about it. But sometimes we have a dishonest man. A master-machinist will want to have his expenses reduced, coming up sometimes with a large bill of expenses for the month. The superintendent will not like that. Well, all he can charge to somebody else is that much deducted. But, then, the superintendent sometimes don't want to do that way. But we have, as I say, all made some very happy and agreeable resolutions about this matter now, and I think we are working it right at present. I think now that I have a set of repairs for the month of November which there will be very little trouble about.

Committee here adjourned to meet to-morrow, December 25.

Examination of Dr. J. J. HARRIS, mayor of the city of Brunswick, Ga., upon the subject of the unrivaled fitness of Brunswick for the eastern terminus of the Atlantic and Great Western Canal.

SITUATION OF BRUNSWICK, GA.

Brunswick is situated on an extensive plateau, having the shape of a peninsula, and covered with live-oak, cedar, &c., thirteen miles from the outer bar. The ground, for several feet deep, is pure sand, with a sufficient surface deposit of alluvium to fit it admirably for gardening purposes. The city front is mainly upon Little Turtle River, which has a bold bluff, giving an excellent view of the river, bay, marshes, and circumjacent islands.

In an address to the commercial convention, held at Memphis in 1869, Judge Houston, then mayor of Brunswick, uses the following language:

There is not a more beautiful or healthy location for a large city to be found in this or any other country. The city is situated on a high and dry point of land, covered by a beautiful and magnificent grove of live-oak. The air is most pure and refreshing. The city lies within full view of and is perfectly open to the broad and majestic Atlantic. The sea-breeze, which is regular and constantly waited in, so tempers the heat during the summer months that it is surprisingly cool and pleasant. Brunswick is blessed in this particular; vessels can visit the port with impunity at all seasons of the year.

HEALTHFULNESS.

Ex-Governor Herschel V. Johnson, in a published letter, says:

In point of healthfulness, it (Brunswick) stands unrivaled by any sea-port in the United States. It is situated on an extensive plateau—a pure sandy beach, covered with live-oak and cedar, with not a drop of fresh water in miles of it; whilst all the depressed localities are swept regularly by the tides, that cleanse them and carry off all the decaying matter. While yellow fever has visited, with fatal ravages, other sea-ports of the South, I believe it is historically true that not a single case has ever originated in Brunswick.

This latter fact, announced many years ago, still applies, notwithstanding the population has in the meantime increased to about three thousand. On several occasions cases of yellow fever have been brought to Brunswick from a distance, but in no instance has the infection spread. Indeed, it would seem as if the atmosphere of Brunswick is fatal to the specific poison of that fearful scourge.

On this subject, the Georgia delegation in Congress in 1855, composed of Mr. Stephens, Mr. Toombs, and others, in a memorial addressed to that body touching the establishment of a navy-yard at Brunswick, say:

In this respect we are satisfied that no harbor on the whole line of sea-board surpasses, and we think none equals, that of Brunswick. Its mean temperature is 67° Fahrenheit, while the thermometer seldom rises to 90° or falls below 30°. Pure, sweet

water can easily be obtained by digging down to a stratum of fine sand, which is covered by a thin one of hard-pan, and underlies the whole section of country. The general salubrity of the climate, added to the great natural beauty of the scenery, embracing the ocean, river, the circumjacent islands, the bluff of the city, and the country around, add greatly to the other advantages of the proposed location for a navy-yard.

Hon. Albert G. Jewett, formerly United States *chargé d'affaires* at Paris, says:

I commenced about one year ago to build two river-steamers in Brunswick, and finished them about the 14th August last past. The climate is admirable. I have had some experience of climates in North and South America and in the Old World, and I made up my mind, after seeing the effect of it on my men and experiencing the effect of it on myself, that I have never seen any place where a crew of men—northern or southern, white or black—could do more work the year round than in Brunswick. I think a crew of Maine ship-builders can do more work in Brunswick in a ship-yard in one year than they can do in Maine. I had not a man sick, either winter or summer, on account of climate, nor was there a day's work lost on account of heat during the summer months.

The bar and harbor of Brunswick combined are unequaled by those of any other port south of the Chesapeake. They have been thoroughly surveyed at different periods by order of the United States Government. After most careful examinations and comparison with the other harbors, the Government purchased an admirable site in Brunswick Harbor for its naval depot. The last survey was superintended by Prof. A. D. Bache, the head of the United States Coast Survey. Previous surveys had been made, the most thorough of which was by Commodores Woolsey, Claxton, and Shubrick. The report they made was, "that 18 feet at low water is the lowest draught of water in the channel-way; the average rise of tide is 6 feet, which gives at high water on the bar 24 feet, sufficient for a frigate;" and in concluding their report they declare, "Having duly weighed the relative pretensions of Charleston, Port Royal, Savannah, Brunswick, and Saint Mary's, (Fernandina,) we have no hesitation in preferring Brunswick." On fall-tides, a greater draught than 24 feet can be brought over the bar and up to the railroad wharves.

The bar and channel are so plain and safe that many vessels of largest size have entered and departed without pilots. Many others take pilots only because it is required by the conditions of their insurance.

Says Hon. A. G. Jewett, previously quoted from:

The harbor is of sufficient capacity to contain more shipping, with safe anchorage, than is usually found at one time in the harbor of New York, Liverpool, or London, I presume, and that without adding any expense except that dictated by the interests of share-owners. It is completely land-locked, and consequently a very safe harbor. The wharf-room available at Brunswick is sufficient for the commercial requirements of any city in the Union. The transfer of cargo from car to ship, and from ship to car, is performed at Brunswick with absolute minimum of trouble and expense. The railroads extend to the wharves.

CONNECTION WITH INTERIOR BY RAILROADS.

The Macon and Brunswick Railroad connects Brunswick with the system of railroads converging at Macon, Ga., and radiating thence, with their various connections, to every point of the compass. Forty miles from Brunswick this road crosses the Atlantic and Gulf Road, uniting Brunswick with Savannah on the one hand, and with South-western Georgia and Florida on the other. Running almost due west from Brunswick, and very nearly on the line of the thirty-second parallel of latitude, is the Brunswick and Albany Railroad, now finished to within two miles of Albany, and graded almost the entire distance to Eufaula, Ala. This road contemplates a westward extension, which

will ultimately connect it with the Southern Pacific Railroad, whose eastern terminus must be Brunswick. Both these roads pass through a country of illimitable yellow-pine forests, that offers rare inducements to immigrants, both on account of the mildness and salubrity of its climate and the adaptation of its soil to the culture of cotton, the cereals, esculents, the vine, and to sheep-raising.

RELATION TO ATLANTIC AND GREAT WESTERN CANAL.

Brunswick is, on an air-line, about thirteen miles, at the most available point, from the Altamaha River. Some years ago about \$600,000 were expended in the construction of a canal from Brunswick to the Altamaha. The scheme fell through because of a general financial convulsion. The labor of a few weeks and the expenditure of a small sum of money would perfect that work.

The Altamaha, as is known, is the product of the Oconee and Ocmulgee Rivers, the latter being the last stream which the proposed line of the great canal touches. Darien, situated at the mouth of the Altamaha, for lack of water on its bar, insufficiency of anchorage, and the insalubrity of its climate, can never be made a city, and, therefore, is unsuited for the terminus of the Atlantic and Great Western Canal; while Brunswick, for the very opposite reasons, and many others that might be mentioned, should be the terminus.

DECEMBER 25, 1873.

THOMAS E. WALKER recalled.

By Mr. WEST:

Question. According to the statement which Mr. Robson submitted to us last night, we find that the inward freights of the Green Line are two millions and upward per annum?

Answer. I think that is the total south-bound and west-bound.

Question. No. The south-bound is \$2,122,000, and the north-bound is \$285,000. When you say north-bound, do you mean everything which goes west and north?

Answer. Yes, sir; over our line.

By Mr. DAVIS:

Question. You mean your cars?

Answer. Yes, sir.

By Mr. WEST:

Question. How does the cotton product find its way from this part?

Answer. Most of it goes by the sea-board route.

Question. From here to Charleston?

Answer. Yes, sir; and to Savannah; some of it by the air-line from here to Dalton, and thence to Lynchburgh; some over the Atlanta and Richmond Air-line—a new line opened for business this season.

Question. Does this \$285,000 worth of north-bound freight include your cotton?

Answer. Yes, sir; it includes everything over our line, north-bound or west-bound, as we call it.

Question. If cotton goes from here to Savannah—

Answer. We have nothing to do with that. It includes only such

freight as goes by the Green Line. It has nothing to do with the other sea-board lines.

Question. Have not you a Green Line from here to Savannah?

Answer. Yes, sir; we have the Green Line from what we call initial western points. There is no Green Line from Atlanta proper to Savannah. That is regarded as local, and under the control altogether of the Central Road.

Question. In other words, this north-bound freight, amounting to \$285,000 per annum, does not represent the total charge on the export of cotton from Atlanta?

Answer. Not at all. A very small proportion. I do not suppose the Green Line shipped over four or five thousand bags, if that much, last season. We get a very small proportion.

By Mr. SHERMAN:

Question. You mean bales, I suppose?

Answer. Yes, sir. The only cotton they get, I think, is small shipments to manufacturers direct in the interior towns, perhaps, of Massachusetts and Rhode Island—a few manufacturers who go South and buy their own stock; who do not go to New York or Boston, but buy direct here.

By Mr. WEST:

Question. Have you any knowledge of the amount of cotton that is marketed here per annum and exported from Atlanta?

Answer. No, sir. I am not thoroughly posted in reference to that matter. I think there was some 30,000 bales received here last year. I think, perhaps, there has been nearly 40,000 received up to this time. The estimate is that it will reach as high 60,000.

A BYSTANDER: The total receipts at Atlanta to this time have been 40,807 bales since the season opened, on the 1st of September. Out of that there were 36 bales included that passed here *in transitu*. There have been shipped from Atlanta up to this 39,374 bales, leaving on hand 1,433. Those are the receipts by wagon. The figures of last year will not exceed over 30,000 bales.

By Mr. WEST, (to the witness:)

Question. The total crop marketed here was 30,000 bales last year?

Answer. Yes, sir.

By Mr. SHERMAN:

Question. Is there but one railroad from Atlanta to Savannah?

Answer. Yes, sir. There is a diverging line by Macon, known as the Macon and Brunswick line. But the Georgia Central controls it from here to Savannah.

Question. Have you a statement of the aggregate receipts of the freight of the Georgia Central?

Answer. No, sir; I have not.

By Mr. DAVIS:

Question. In whose control is the Georgia Central?

Answer. It is a stock company. Mr. William Wadleigh represents it as president.

By Mr. SHERMAN:

Question. Have you a chamber of commerce here?

Answer. Yes, sir. There is another line to Savannah by way of Augusta.

By the CHAIRMAN :

Question. What constitutes the freights north by the Green Line?

Answer. They are mostly heavy articles. We ship a good deal of lumber, naval stores, turpentine, rice, and iron ore. They are nearly all heavy articles, upon which exceedingly low rates are given, in order to stimulate the business. It has been the purpose of the line to do that, and thus cause it to increase.

Question. The \$285,000, and over, in that table, is made up of freights upon such articles as you have just mentioned?

Answer. Yes, sir. I suppose the majority of that revenue is derived from iron ore.

Question. That represents a tonnage much larger in proportion to the south-bound tonnage than the receipts are in proportion?

Answer. Yes, sir. The rates are so much less. On fourth and fifth class from Louisville to Charleston and Savannah the charge is 65 cents per hundred on each. The rates are the same on fourth and fifth class. From Cincinnati the charge is 70 cents per hundred; that is, on each class. From Chicago the charge is 75 cents.

Examination of Governor JOSEPH E. BROWN.

By the CHAIRMAN :

Question. How are the railroads of Georgia organized; is it by joint-stock company, private corporations?

Answer. Yes, sir. Indeed, all the railroads, I believe, of Georgia, which are in operation, were organized as joint-stock companies, except the Western Atlantic, which was built by the State out of the State treasury. It is now, however, in the hands of a corporation known as the Western Atlantic Railroad Company, and was leased by the State to the present proprietors.

Question. That runs from Atlanta to Dalton?

Answer. From Atlanta to Chattanooga.

Question. Is there combination between those railroads in any way; any organized combination or arrangement between them?

Answer. In reference to what matter?

Question. In reference to freights.

Answer. We have no combination except with what is called the Green Line, a fast through-freight organization that I expect you have had explained to you.

Question. Are there any other lines of the same character?

Answer. No, sir; the Green Line is an organization of the different roads from Saint Louis and Louisville, extending to the Southern cities generally. For instance, coming through, Nashville is a Green-Line terminal point; Chattanooga is; also, Atlanta. And then from here, diverging and extending to Macon, Savannah, Augusta, Charleston, Columbia, S. C., and out, the Atlanta and Richmond Air-line as far as Charlotte, N. C. It is a combination of this character: All the different roads connect with the line for the purpose of expediting the transportation of freight—formed an organization known as the Green Line. They at first painted their cars green or with a green stripe upon them, in order to indicate that the cars belonged to the Green Line, and each road put in its prorate of cars. The cars of the Western Atlantic Railroad, for instance, which is the road over which I preside, from here to Chattanooga, are put into the Green Line at its prorate, which might be four hundred and fifty cars, although we have not that number in, not owning the cars. Perhaps no two of the roads have in the full prorate;

but we have altogether some twenty-odd hundred cars in the Green Line, and those cars are confined to this through business. They are not local on the roads at all, but confined to the transportation of freight from the west to the eastern terminal points. A Western Atlantic Railroad car is sent to Saint Louis; it is loaded there with bacon for Charleston, S. C. It is sealed there, and it is brought to the terminal point of the Saint Louis and Iron-Mountain Railroad. It is there delivered to the Nashville, Chattanooga, and Saint Louis Road at Columbus, Ky., and is transferred from there to Chattanooga, over that line, it all being under one management. There it is delivered to the Western Atlantic. Our engine takes it and brings it to Atlanta. We deliver it to the Georgia road, and the engine of the Georgia road carries it to Augusta. There it is delivered to the South Carolina road, and the engine of the South Carolina road carries it to Charleston, and there it is opened and the freight is delivered, if it is through freight from Saint Louis to Charleston. If it is intended for Atlanta it stops here, and is unloaded. If it is intended for Savannah, it goes to Savannah and is unloaded. The whole object of the line is to put these through freights over as rapidly as possible, which we are driven to do to meet competition from several other lines, or lose a good portion of the business, and to prevent the transshipment at the terminal points of each road. Under the old system the same freight which I have traced from Saint Louis to Charleston would have come to the end of the Saint Louis and Iron-Mountain Road; would have been transshipped from the cars of that road to the next; it would have come to Nashville; there it would have been taken out of the cars of the road over which it had just passed, and been transferred to the Nashville and Chattanooga road; at Chattanooga it would have been transferred, and also at Atlanta and Augusta, and then it would have gone on to Charleston, taking a very considerable length of time to put it through under the present organization.

Question. Did that involve a transfer from one car to the other?

Answer. Yes, sir. The State owning the line at that time, kept her own cars mainly upon her own road; all her cars, we may say, except occasionally there was some interchange between lines in a press. But, as a general rule, they were kept on our own lines, and the freights landed at Chattanooga had to be transferred. That occasioned a very considerable delay to western freight. At Atlanta we had it all to transfer again to the different roads here, to which it was to be distributed, and there were very great delays about it. For the purpose of expediting the freights, this organization, called the Green Line, was formed, by which each road put into the line, as I have stated, its pro-rate of cars, and those cars are given up to the line. We have no local control over them. For instance, the cars of the Western Atlantic belonging to the Green Line I have no right to control for local business. It is true that sometimes, in a press, some one of the roads may pick up a few cars and use them for a day or two. But there is always complaint made by the others at once, because it is a violation of the contract between the roads.

Question. The line is similar to lines of the same character in Northern States?

Answer. Yes, sir. Where there is an arrangement to expedite freight by sending it over different lines without transferring it at the terminal points of the different companies' roads.

By Mr. SHERMAN:

Question. How do you regulate the rates?

Answer. We have what is called the Committee of the Green Line, a committee composed of some five or six gentlemen connected with the line, as it is not convenient for the presidents and superintendents of all the lines to be at every meeting. That committee regulates the affairs of the line. For instance, if there is a claim where it is doubtful which should pay the damages, that matter is regulated by that committee, and we abide their decision. Any matter in regard to regulation of freights, for instance, increasing or diminishing the price, is generally referred back to what is called a Green-Line meeting; that is, they get as many of the presidents or superintendents together as they can. We have to change rates very frequently; because competing lines drive us to do it, as you have learned they do in every other section of the country. As an illustration, freights come around from Cincinnati by the Chesapeake and Ohio road, down through Virginia and around and up through Augusta and Atlanta. Freights have been shipped into Atlanta, (last winter, probably;) for instance, a hundred car-loads at one time came around that route. We cannot afford that here. And although we may not be getting a rate that we can pay a dividend upon, we are obliged, whenever that state of things comes along, to lower our freights, or give it up and let it go that route. Another route that has greatly diminished our income has been the completion of the line from Louisville down to Montgomery, Ala. There is a competing line now with ours that is some thirty or forty odd miles shorter to Columbus, Ga., than our line is. Consequently we gave that up entirely to the other line, and do not pretend to solicit freights for there at all. They come down Mr. Finck's lines by Montgomery. Then Mr. Finck again is troubled with competition on the other side of the Mississippi River, coming down to Vicksburgh and across down to New Orleans by rail; up by way of Mobile into Montgomery. Very lately he has been driven to reduce his rates by reason of that strong river competition. Another reason probably why our freights may be a little higher than the northern freights is this: Take the Pennsylvania Central and a number of the leading roads, and you have a return-freight generally in your cars. In the main you run loaded both ways. But it is not so with us here. The first year that I took charge as president of the Western and Atlantic Railroad, under the lease, the tonnage-account showed that out of all the cars that were loaded from the West to the East, one out of twelve and a fraction, or thirteen and a fraction, returned loaded. I think it was from one to thirteen and a fraction. Last year we had improved a little on that. About one in every eleven, if I recollect correctly, came back loaded. Consequently we ran the round trips, in ten out of eleven, to get a through route on it one way. If we had a return freight to the West—if you would buy as much from us as we have to from you—we could put freights a great deal lower. But we cannot run the round trip from here to Saint Louis or Louisville, and carry up the unloaded car and bring it down loaded as low as we could carry if it was loaded each way. Consequently our back rates from the West are generally lower than the eastern-bound rates, for the reason that it is better to carry them very low than it is to go back empty.

Question. How do the rates on the through lines compare with the local rates?

Answer. The local rates are always higher than the through-line rates.

Question. What is the proportion per ton per mile?

Answer. I could not be accurate about that without the statistics before me. I have sent for Mr. Anderson, who will bring the local

tariffs of our road; and you already have from Mr. Walker the Green-Line rate. But, of course, the local rates are much higher, and for this reason: When a railroad is built here it depends always, in a great degree, for its success upon the business along its line. A party of gentlemen being incorporated to build a railroad generally look to the country and what the probable freights will be, and make up their calculations whether they can make it pay to invest their capital, looking to the probable prospects of the business. So, all along our line here, the roads have been built mainly with a view to these local rates. But if we can extend farther—for instance, if we can bring freights from Chicago or Saint Louis, going to Charleston, and can make even but very little on them, it is better than to be idle. And we can afford to carry them much lower than local rates; for if we put everything as low as those rates we could not pay expenses and live; but we may, having the rolling-stock, bring those through freights at a much lower rate than we can afford to bring the local, and make something; and whatever we do make is that much taken off the local; for if we lived at all, we should have to charge it to the local if we did not get it on the through.

Question. Do you ever charge higher rates on shorter distances on your own line than on longer distances?

Answer. I believe that is almost the universal rule.

Question. On your own line?

Answer. Yes, sir.

Question. Perhaps you do not understand me. Say the freight from Atlanta to Chattanooga is 50 cents a hundred. Would you charge to any intermediate point at a higher rate than 50 cents a hundred?

Answer. No, sir; not by our road. I thought you meant did we charge a higher rate from here to Marietta, in proportion, than to Chattanooga. I did not understand your question.

Question. You do not make any charges of that kind?

Answer. If we are making any of that kind I am not aware of it. It is not my intention to make such charges.

Question. I have seen the statement that the rates from Saint Louis to Savannah are less than the rates from Saint Louis to Atlanta.

Answer. That may be so. I am referring to my own road, and not to the Green Line. That is done very frequently, and for this reason: The Atlanta business is legitimately ours. It is very hard for any competing line to take that from us. It is true since Mr. Finck's line is completed by the way of Montgomery, it will be easier to do it than formerly. But it is considered as freight belonging to us. The Charleston freight, from Chicago or Cincinnati, is not legitimately ours. We have to come into strong competition for it. We have no more claim to it than any other line has. The Baltimore and Ohio will take that and carry it by rail to Baltimore, a shorter distance. We make on those through rates from Chicago to Charleston, for instance, scarcely anything. But it is an outpost. We must maintain that or have our territory further invaded. Hence, we must meet them at the water, or they will drive us back, step by step, and we will lose almost our whole field, and the more of the through business we lose the higher we must make local rates, if we pay expenses and meet our obligations. And as one reason why railroads are not probably overcharging a great deal, considering the situation of the country, there are very few of them now who are able to pay dividends, manage as well as they can; and some roads, heretofore paying heavy dividends, owing to the active competition, now are not able to do so.

Question. Take your own road as one of the leading railroads, what dividends do you pay?

Answer. We lease the road from Georgia, and pay them \$300,000 a year rental, or \$25,000 a month.

Question. How much is that rental interest on the whole investment of the State?

Answer. I am not able to tell you. I do not know that any one can tell what the whole investment was. It was done under political administrations, and was a little more extravagantly done, no doubt, than it would have been by a prudent company. But I suppose that, taking the actual investment, it is probably from 5 to 6 per cent. upon what the State gave for the road. But that is rather a guess, for I do not know what the actual expenditure was, although I had control of it for eight years nearly, under a political administration. I never was able to look through and determine what my predecessors had spent upon it exactly.

Question. The company now running the road is associated merely for the purpose of running it. Does your company own the equipment?

Answer. Yes, sir. We leased from the State of Georgia the road with all its equipments and the exclusive use of it for twenty years, paying them \$300,000 per annum as a rental.

Question. Do you supply the additional equipment as it is needed?

Answer. Yes, sir; we have to supply everything. We have given a bond in \$8,000,000 to return the road and its equipment in as good condition as we received it from the State, and pay \$25,000 per annum rental. We have now had the road under that lease three years day after to-morrow; and we have not divided a dollar of dividends among the lessees. We found it in bad condition, and we have not been able from what we have made over the rental yet to put the road in as good condition as it ought to be.

Question. You are adding to the equipment, I suppose, and putting your profits into that?

Answer. Yes, sir. This year we have lost money pretty heavily, since April, on account of the panic.

Question. You stated awhile ago that cotton was local freight?

Answer. No, sir; I have made no statement about cotton.

Question. Please state how cotton is transported from Atlanta, and where the market is.

Answer. The markets of the world are open to Atlanta; but most of the cotton goes from here by way of the coast. For instance, it goes on the Central Road from here to Savannah, and it goes on the Georgia Road from here to Augusta, and thence to Charleston. Some of it goes the coast line from there; from here by way of Atlanta and Richmond Air-Line Road, lately opened, and a small portion of it goes West from here over our line. The most that we get comes by way of Dalton, and thence through East Tennessee. A small portion of it goes by way of Chattanooga and Nashville, going to the interior towns, as I heard Mr. Walker state, of New England. But that is a very small trade. That does not belong to the Green Line. This is only a local station of the Green Line, so to speak. I saw some very extravagant statements this morning in the paper attributed to Colonel Frobel, which doubtless do him injustice, in relation to our local freight, and I desire that our agent bring them in in order that they may be corrected. I could not correct them from memory.

The local tariff of the Western and Atlantic Railroad Company, to take effect November 16, 1873, was here put in evidence by Governor Brown, and reads as follows:

* Local tariff, Western and Atlantic Railroad Company, to take effect November 16, 1873, and superseding that of March 7, 1871, and all local specials.

RATES OF FREIGHT BETWEEN ATLANTA AND--

DIVISIONS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Vining's *	Mayrtn.	Big Shanty.	Allatoona.	Stegalls.	Rogers.	Kingston.	Halls, *	McDaniel.	Resaca.	Tilton.	Dalton.	Tunnel Hill.	Ringgold.	Graysville.	Chickamauga.	Chattanooga.
Distances	10	20	34	40	48	52	58	68	78	84	91	100	107½	115½	120½	125½	138
1st class	\$0 30	\$0 37	\$0 40	\$0 45	\$0 50	\$0 52	\$0 55	\$0 60	\$0 63	\$0 65	\$0 65	\$0 68	\$0 70	\$0 73	\$0 76	\$0 78	\$0 80
2d class	21	25	28	33	36	37	43	46	48	50	52	53	55	58	60	63	65
3d class	19	23	27	30	33	35	37	40	42	44	46	48	50	52	53	54	55
4th class	16	22	23	25	27	29	30	32	33	34	35	36	37	39	41	43	45
LESS THAN CAR LOAD.																	
Flour, apples, onions, potatoes, in barrels, per barrel	25	28	32	31	36	38	39	43	45	48	50	52	54	56	58	60	60
Cement and plaster, per barrel	20	25	30	32	34	36	38	40	42	44	46	48	50	52	53	54	55
Grains of all kinds, peas, corn, meal, bran and mill-stuffs, per 100 pounds	10	11	12	12½	13	13	13½	14	14½	15	16	17	18	19	21	22	23
Hay, less than car-load, per 100 pounds	12	15	18	20	22	23	25	27	28	29	30	31	32	33	34	35	36
Cotton, per bale	70	90	1 10	1 20	1 25	1 30	1 35	1 45	1 55	1 65	1 70	1 75	1 80	1 85	1 90	1 95	2 00
CAR LOAD RATES.																	
Per car of 16,000 pounds.																	
Flour, apples, onions, and potatoes, in barrels, per car	13 00	15 00	17 00	18 00	20 00	21 50	23 00	25 00	27 50	30 00	32 00	34 00	36 00	38 00	40 00	42 00	44 00
Bran, hay, fodder, and other forage, in bales, per car	10 00	12 00	15 00	16 00	17 00	18 00	20 00	21 00	22 00	23 00	24 00	25 00	26 00	27 00	28 00	29 00	31 00
Machinery and new furniture, re-leased, per car	16 00	20 00	22 00	24 00	26 00	28 00	30 00	31 00	32 00	33 00	34 00	35 00	37 00	39 00	41 00	43 00	45 00
Live-stock, released, per car	18 00	20 00	25 00	27 00	30 00	32 00	35 00	36 00	37 00	38 00	39 00	40 00	42 00	44 00	46 00	48 00	50 00

Local tariff, Western and Atlantic Railroad Company, to take effect November 16, 1873, and superseding that of March 7, 1871, and all local specials—Cont'd.

RATES OF FREIGHT BETWEEN ATLANTA AND—

DIVISIONS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Vining's.*	Symrna. Marietta.	Big Shanty. Acworth.	Alatoona. Barlow.	Stegalls. Cartersville.	Rogers. Cass.	Kingston.	Hall's.* Adairsville.	McDaniels. Calhoun.	Resaca.	Tilton.	Dalton.	Tunnel Hill.	Kingold.	Graysville.	Chickamauga.	Boyce. Chattanooga.
Distances	10	20	34	40	48	52	58	68	78	84	91	100	107½	115½	120½	125½	138
Agricultural implements, wagons, saas, doors, blinds, frames, wagon and carriage material, furniture, common and household goods, per car, released....	\$15 00	\$18 00	\$20 00	\$21 00	\$22 50	\$23 50	\$25 00	\$26 00	\$27 00	\$28 00	\$29 00	\$30 00	\$32 00	\$34 00	\$36 00	\$38 00	\$40 00
Pig and scrap iron, per car....	10 00	12 00	13 00	14 00	15 00	15 50	16 00	16 50	17 00	17 50	18 00	18 50	19 00	19 50	19 75	20 00	20 00
Lumber, laths, shingles, bark, staves, slate and marble, in blocks, per car....	9 00	10 00	10 50	11 00	11 25	11 50	11 75	12 00	12 50	13 00	13 00	13 50	14 00	14 50	15 00	15 50	16 00
Shipper load and unloads. Coal and coke, owner's risk of wastage.....	10 00	11 00	12 00	13 00	14 00	14 50	15 00	15 50	16 00	16 00	17 50	19 00	19 50	21 00	22 50	24 00	25 00
Shipper load and unloads. Salt, cement, plaster, fertilizers, lime as fertilizer.....	10 00	12 00	12 50	13 00	14 00	15 00	16 00	16 50	17 00	17 50	17 75	18 00	18 50	18 75	19 00	20 00	20 00
Fertilizers, less than car-load, per 100 pounds.....	10 00	12 00	12 50	13 00	14 00	15 00	16 00	16 50	17 00	17 50	17 75	18 00	18 50	18 75	19 00	20 00	20 00
	10	10	10	10	11	12	12½	13	13½	14½	15	15½	16	16½	17	17½	18

* No agents; freight must be prepaid.

Pig, scrap iron, ores, sand, stone, brick, lumber, laths, shingles, bark, slate, marble, coal, coke, and lime, must be loaded by shipper and unloaded by consignee at destination, without detention of car. This company does not engage to handle or to transfer at Chattanooga, Dalton, or Atlanta, any of the foregoing articles at rates as above.

Stoves, hoop, sheet, and galvanized iron, will only be carried at the lower rates when shipped at owner's risk of breakage, or of damage by wet, and coal-oil only at the lower-class rate given for it when shipped at owner's risk of leakage. When shipped at risk of carriers, the higher-class rate will be charged. Shippers must be careful to indicate in their shipping-bills which rate they desire, and property will be billed accordingly. In the absence of any instructions, the higher rates will invariably be charged.

Glass, glass-ware, furniture, carriages, wooden-ware, liquids of all kinds, and other articles noted in classification "owner's risk," when taken at the rate indicated, are carried at owner's risk of breakage, chafing, or leakage, whether the bills of lading so specify or not.

Furniture, agricultural implements, and machinery, in car-loads, will be transported at the rates indicated only when the carriers are released from loss or damage arising from chafing, breakage, or other injury, not caused by their negligence; but if transported at carrier's risk, ten per cent. additional will be charged.

This corporation reserves the right to change any of the above rates, classes, or conditions, at their pleasure.

By Mr. SHERMAN:

Question. Are you able now, from your experience of three years, to give us the possibilities of carrying freight on the Chattanooga and Atlanta Road per ton per mile—I mean the net cost of carrying the freight per ton per mile exclusive of interest, including, however, the rental you pay.

Answer. Do you mean the rate per ton that we can simply carry without making any profit—the actual cost of carrying?

Question. Yes, sir; including the actual rental that you pay. Take into consideration the cost of fuel, labor, &c., at what rate per ton per mile, taking the through and local freight, and altogether can you carry from Atlanta to Chattanooga northward and southward freight?

Answer. I could not tell you that without taking considerable time to make a calculation. We have no statistical table that shows it, and when you embrace all our through and all our local rates and put them together, to say what the whole of it can be carried at, and simply pay expenses and rental, I would not be able to do it. I can mention some articles, however. For instance, in the transportation of coal during the last summer, we carried it at a cent and a quarter per ton per mile. We are now carrying coal over the road for Port Royal, with a view to opening a coaling station there, at a cent per ton per mile; but I doubt whether it pays expenses. In fact, I do not think it does.

Question. Where do you get the coal on your line of road?

Answer. It is obtained at different points. There has been a great deal shipped into Georgia from East Tennessee from a place called Coal Creek and the mines about it. It is thirty miles from Knoxville, and toward the Cumberland Mountain. It is brought down the East Tennessee road to Dalton, and goes from there into Atlanta and is distributed in Georgia. Then the largest coal interest which has been operated is the Suwanee mines, on the Cumberland Mountains, on the Nashville and Chattanooga Road. The station is Cowan's station, beyond the Cumberland Mountain. There is a mine in the corner of this State which I am interested in. We ship down to the Nashville and Chattanooga Road twenty miles beyond Chattanooga. Then there are two smaller mines being worked. These are the points from which the coal is mainly brought into Georgia. There is a little anthracite brought from Pennsylvania, I believe. But that is very limited.

It might be proper that I should state in reference to coal, when I said that we were transporting at a cent a ton a mile across to the coast, that that is a through rate. Our local winter rates are higher than either I have mentioned, for the reason that we are very much crowded in winter when there is anything of a business doing, for our freights are compressed in the main into four or five months; and the balance is a very dull time. During that period the coal is burdensome to us, and if shippers require it brought during that time we charge a higher rate than in the summer.

Question. How does the pay of your employes compare with the pay of employes on northern roads?

Answer. I do not know that I can give you the comparison. I do not know what they charge there. We pay our best engineers \$4 a day; we pay our machinists, who are good ones, about \$3.50 a day now in the shop. Our mechanics get a little less than that. However, at this time, on account of our low freight, we have not been working on full time. We pay a freight-conductor, say, \$80 a month, and a passenger-conductor from \$85 to \$100. Night-conductors receive \$100 a month.

Question. What do you pay for common labor ?

Answer. During the summer season we have paid for track-hands, in keeping up the repairs of the track, \$1.25 per day ; and we are now, in the winter, only paying \$1 a day. The days are short, and they cannot be of very much service. We pay \$1.25 for what is called train-hands or brakemen.

By Mr. NORWOOD :

Question. Do these laborers find themselves ?

Answer. Yes, sir. We had a system of meal-tickets which we found them in till lately, but have been obliged to cut them off and raise their wages a little without meal-tickets. The statement I have just made is upon the present basis, without meals.

By Mr. WEST :

Question. What did you pay them when you gave them meal tickets ?

Answer. We have never given meal-tickets to the track-hands. They always find themselves. Those connected with the running of the trains receive a little less than they do now. For instance, a freight-conductor received \$75 a month then, with meals, and he now receives \$80 without meals.

Question. How about the train-hand, who gets now \$1.25 a day ?

Answer. He received a dollar a day with his meals. We have only made that change within about a month past, and that under a financial pressure which compelled us to reduce expenses to enable us to pay the rental.

By Mr. DAVIS :

Question. What are your working expenses ; the percentage ?

Answer. I cannot tell that exactly at this moment, without having the report with me. It is some 68 or 69 per cent., I think. I will say 68 to 70 per cent. I cannot be accurate to a fraction, speaking from recollection.

By Mr. SHERMAN :

Question. That does not include the rental ?

Answer. No, sir ; that is actual working expense. In that of course I include all expenses. Many of the railroad reports are made up of ordinary and extraordinary expenses ; and there is a good deal of humbug about it, as you are aware.

By the CHAIRMAN :

Question. In settling for use of the cars, I understood Mr. Walker to say that your former car-mileage allowed had been $1\frac{1}{2}$ cents per mile, and that it is now 2 cents. Suppose your road, which is one hundred and thirty-eight miles long, sends a car throughout the entire length of the Green Line, from Saint Louis to Savannah, you are allowed now 2 cents a mile for the use of that car over all the balance of the roads, except your own ?

Answer. That car gets mileage everywhere she runs, and so do all the cars over our own road, as well as over any others, for the reason that she does not belong to our road exclusively. She draws her mileage. So does the Iron Mountain Road car, and every other.

Question. Do you not regard that as more profitable than the business done on your own road ?

Answer. Much more profitable. If we could put in our cars and run them all the time we would like it, and make more profit ; but one

drawback on that, I will state, is this: There are six months of the year, probably, when a large proportion of these cars are idle and drawing us no mileage. The business in the summer is very light, and does not require more than about half the number of cars we have to have in winter, and yet we must invest enough in the cars to furnish a supply to do the business in the winter. As soon as the winter press is over our cars are run on the sidings, and lie there till business revives, and, consequently, we lose a great deal in the investment of capital in that way, which is more than half its time, probably, lying idle.

By Mr. DAVIS:

Question. What is your local rate to-day between Chattanooga and Atlanta, on fifth-class freight?

Mr. ANDERSON. Fifth-class is 22 cents a hundred. That includes grain, hay, &c.

Question. Between Atlanta and Chattanooga?

Answer. Yes, sir.

Question. On the same class of freight fifty miles out on your road into Atlanta, what would it be?

Answer. Thirteen cents.

Question. Twenty-two cents for one hundred and thirty-eight miles and 13 cents for fifty miles?

Answer. Yes, sir.

Question. Suppose you come a little nearer this way, say twenty-five miles out on your road.

Answer. Twenty-five miles would be 11 cents.

Question. Suppose fifty miles between any two points on your road between each other, what would be your rates on the same class of freight?

Answer. Thirteen cents fifty miles either way; either from one station to another, or one station fifty miles from Atlanta to Atlanta.

Question. Then you are not governed by your tariff?

Answer. Yes, sir; fifth class is not on this tariff. We have a special tariff from Chattanooga, with five classes. These we use for local. Fifth class is grain. Meal stuffs, bran, and such as that is put down under the head of "special."

Question. Fourth-class rate is on your tariff. What is the rate from Chattanooga here to-day on fourth class?

Answer. Forty-five cents.

Question. What is it fifty miles out on your road?

Answer. Twenty-seven cents.

Question. Are you governed in all cases between Chattanooga and here by the tariff which you hold in your hand?

Answer. No. As I said before, we have a special tariff from Chattanooga and a different classification. This is from all stations this side of Chattanooga.

Question. Then you have a different tariff from that for through freight?

Answer. Yes, sir.

Question. What is the transportation on cotton to-day from Chattanooga here per hundred?

Answer. By the bale it is \$2 a bale, or about 40 cents a hundred.

Question. Fifty miles out on your road how much would it be?

Answer. One dollar and twenty-five cents a bale.

Question. What is your local passenger tariff?

Answer. Five cents a mile.

Question. Is that kept up through to Chattanooga?

Answer. Yes, sir.

By Mr. SHERMAN (to Governor Brown):

Question. State whether the rate you charge in the winter on coal is the minimum rate at which you could carry it from Chattanooga to Atlanta.

Answer. I have already stated to you that we are carrying now the through rate for the purpose of building up the trade on the coast at a cent per ton per mile. Some of our railroad-men think we are not covering cost. That is Mr. Wadley's opinion. I asked him to allow the same rates to Savannah, and he thought he could not do it and pay expenses. We carried at a cent and a quarter per ton per mile in the summer. Our idea was that we made no money on it, but would rather carry it for nothing in the summer than to have it crowd us in the winter. We could not probably carry it cheaper in the winter, taking the interruptions and the press on us, than the present rate and justify ourselves in doing so. We try to induce them to ship their coal in the summer, when the rolling-stock is idle, and give them lower rates on that account.

Question. Suppose that the Tennessee River was made navigable in ordinary stages of water from Saint Louis to Chattanooga, and that freight from Saint Louis to Chattanooga could be reduced to \$3 a ton, for what could you transport from Chattanooga to Atlanta, say provisions and supplies, the distance being one hundred and thirty-eight miles, and you receiving a fair, legitimate profit?

Answer. Per ton per mile, do you mean?

Question. You had better take the distance.

Answer. That would depend entirely on how much freight we got, and whether we had a return freight.

Question. You know the demands of your market. Suppose that the supply of provisions for Atlanta was concentrated at Chattanooga and you had the business of the country, at what rate could you transport that business to Atlanta?

Answer. I could not give you an accurate rate there because that abolishes the Green Line and puts it all at one rate from there down under your supposition. It is all delivered there at a certain amount per mile and then we are to bring it all. As it is now, we are bringing part at a local rate and part at a through rate, at almost nothing; and I could not give you the average.

Question. But it would be a dollar and a half or two dollars a ton, I suppose?

Answer. Yes, sir; I should think it would.

The committee here adjourned.

MOBILE, ALA., *December 26, 1873.*

The committee met pursuant to adjournment.

Examination of Col. CALEB W. BUTT.

Mr. BUTT. Mr. Chairman, the project of opening a ship-canal across the peninsula of Florida has attracted some attention in our board of trade for some time past, and has been referred to me as one perhaps in which we were probably more vitally interested than any other. We

have thought it worthy to be presented to you on the score that it involved the interests of a larger scope of the common country than almost any other scheme of water-transportation which can probably be suggested to you during your journey. It involves the interests of the whole Gulf coast from Apalachicola as far around as the mouth of the Rio Grande, as it will avoid the dangerous and expensive navigation around the Florida capes. It has been estimated that a vessel from here to the North, or to Europe, would have to go perhaps eleven hundred miles farther 'around that peninsula than she would have to go with this canal open. It would bring us within a distance of not more than three hundred miles farther from Liverpool than Savannah if vessels could go through such a canal from Mobile and New Orleans. Besides all the advantages affecting immediately the Gulf ports, we would array in our behalf the whole interest of the western country, and its grain-transportation, and all the importations which come to these southern ports. Incidentally, it may not be amiss to mention the Government establishment at Pensacola—I mean its navy-yard. I have heard it suggested that it would be desirable to have some inlet, probably from there to the navy-yard, on Government account. While the project, we think, is a feasible one, it can only be demonstrated by an actual survey and estimate. Our ideas on that subject are, in the absence of a survey, necessarily crude. The produce tributary to this country is largely diverted now by railroad connections eastward; much of the cotton formerly and naturally coming here goes by rail from Montgomery and Selma to Savannah, because they avoid this expensive navigation around Florida. It interests also the eastern ship-owners and manufacturers, who have goods to sell in this country, who have commercial interest with the southern ports, because, in proportion as you reduce the expense of the trip, of course the freights are cheaper. The time consumed, interest on the investment, both in ships and cargoes, and expense of additional insurance, are all very heavily against us. The exportation of cotton from the several Gulf ports would probably aggregate two millions of bales of cotton a year, representing, possibly, several hundred thousand tonnage of shipping to carry it away. We have had the benefit of the appropriations made by the Government, beside our own contributions toward deepening our own harbor. It is a safe bay and land-locked, admitting vessels of heavy draught, of twenty-two or twenty-three feet, over the outer bar. By a system of canals—one already has been constructed at English Bend, from New Orleans to the Mississippi River, a little below the city, into Lake Pontchartrain—it would be perfectly practicable for barges to come down the Mississippi through our lakes and into our bay, and go direct to foreign ports. The small steamboats can go with ease through this inland navigation.

I have the honor to submit to you the following communication to the Mobile Board of Trade :

To the President and Board of Control Mobile Board of Trade :

GENTLEMEN : The committee on commerce, to whom you have referred the question of a ship-canal across the peninsula of Florida, beg to report that they can only briefly recapitulate some of the arguments previously adduced in its favor. In the first place, the enterprise, in view of its magnitude, assumes a national importance, more especially when the varied interests of the whole country in it are considered, viz, the entire country drained by the Mississippi River and its tributaries, all those portions of Mississippi, Alabama, and Florida that find an exit for their productions through the Gulf of Mexico, besides Louisiana and Texas, as well as the Middle and Eastern States which have commercial interests with the South, whether manufacturers or ship-owners or engaged in any way in traffic in southern productions. Its material advantages are

the shortening the route for intercommunication between the different and widely separated portions of our own country and the countries beyond the sea, thus greatly reducing the cost of freights and insurance. We have not the exact data to consult, but hazard not much in asserting that vessels leaving the Gulf coast for our North Atlantic coast or Europe, would save in distance by means of such a canal not less than one thousand miles, going and returning, besides avoiding the great hazard encountered in the dangerous navigation around the capes of Florida—an item of vast importance—without taking into the account the vast saving in time, and the consequent saving in interest on his imports and exports to the merchant, and in the difference between the expenses of a long and a short voyage, and largely in the item of insurance on his vessels to the ship-owner. With such an outlet to the Atlantic Ocean the western farmer, the producers of corn, wheat, flour, meat, &c., would escape the long and expensive transportation by rail to the Atlantic ports. By the aid of a few short canals around the Gulf coast at the few points that are exposed directly to the sea, and the long line of bays and sounds that are protected by the sand islands, extending almost continuously from within a short distance of New Orleans to Saint Mark's Bay, in Florida. Barges laden with produce from Saint Louis, or beyond, could be safely towed into and through such a canal as we are considering quite to the Atlantic coast, or be discharged in Mobile Bay, with sea-going craft for any port in the world, with the expense only of being once handled. It is stated that through a canal across Florida the distance of Mobile from New York or Liverpool would be but three hundred and seventy-five to four hundred miles farther than is Savannah; and Mobile, situated at the outlet of the Alabama, Warrior, and Tombigbee Rivers, making Mobile River, is the natural shipping-point of a much more extensive and productive scope of country than is Savannah.

Looking ahead to the period not far distant when the exhaustless store of coal in Alabama will be utilized, no point on our coast will offer greater attractions than are ours to steamships as a coaling-station, or for the exportation of coal to foreign countries. Our magnificent harbor, admitting ships over the bar at its entrance of the heaviest tonnage, capacious and deep, is land-locked and entirely secure from the storms of the ocean.

So immense would be the tonnage passed through such a canal as that now under discussion from Mobile, New Orleans, and Galveston, it is estimated that only a very small tonnage-due would need be exacted to make its construction and maintenance a very insignificant expense to the General Government, while it would confer inestimable benefits upon a larger part of the population of the United States than any other project that has been suggested.

The best route for such a canal could of course be only determined by actual surveys, though that which would seem to secure the best results is one discussed in the Southern Commercial Convention, a year or two since, viz: from Saint Mark's Bay, thirty-five miles, to the Little Warrior River, thence up that stream to the confluence of the Suwannee and Santa Fé Rivers, forty-five miles, which would bring it to within sixty miles of the deep tide-water of the Saint John's River in East Florida.

We do not venture now upon any elaborate statistical details, which are easily accessible when such earnest interest is elicited as to make them essential, and which the Government at Washington will not fail to consider. This report is designed more particularly to bring before the proper authorities the importance of the work and to elicit inquiry.

As an adjunct to this interesting subject, we incidentally allude to the connection of the Mississippi River by a canal with the waters of the Gulf of Mexico, a work of insignificant magnitude, compared with the first mentioned, but absolutely essential to make the latter available for the great West, and the improvement of the Mississippi River itself. The construction of these works, it seems to us, affords the most ready solution of the great problem of cheap transportation which has of late assumed such profound interest in the potential Western States. The development of new lines of cheap transportation to the sea by such a water-route as we have suggested must accomplish far more for the producers of that important section of the country than any facilities that can be afforded by the best-managed railway. We need not argue the axiomatic truth that the net yield to the producer is enhanced to the exact proportion that the expense of getting his commodities to the consumer, wherever that may be, is diminished; the subject is fertile in its suggestiveness and capable of most elaborate expansion, but perhaps we have said enough to excite the attention and prompt and critical examination, its truly national importance demands, and we submit our report, imperfect and crude as it is for your respectful consideration.

Very respectfully,

C. W. BUTT,

Chairman Committee on Commerce.

There was a proposition made by the Saint Louis Board of Trade a long time ago for this Mississippi boat-canal. I had the pleasure of

some correspondence with the president of the board of trade in reference to the matter, endeavoring to enlist him in the larger scheme of a ship-canal, as opposed to the boat-canal, thinking that would be more worthy of the attention of the Government. The ship-canal would accommodate all his purposes and enlist in its behalf the whole of the Southern States.

By Mr. DAVIS:

Question. Can you give us the length?

Answer. According to this programme which I have suggested in this paper, which I took from one of the reports of the national board of trade, it was—I cannot give you the length entirely, but there seemed to be about a hundred and five miles of actual digging. They had to clean out the channels of the rivers. They were suggested, I suppose, as being natural water-ways, that would require less expenditure to make them available than otherwise.

By Mr. CONOVER:

Question. Have you estimated the expense of digging this ship-canal as you propose?

Answer. No, sir; I have here a report made by one of our own civil engineers, a man of some repute, and who is now dead:

MOBILE, September 17, 1872.

DEAR SIR: In reply to the request with which you have honored me, that I would furnish to the board of trade such information as I have, and also my views touching a ship-canal across the peninsula of Florida, I beg leave to present the following:

Upward of a quarter of a century has elapsed since I first noticed the agitation of this project in the newspapers. During this time several instrumental surveys for the canal were made; but to this day, so far as I am able to learn, it has not been ascertained whether a ship-canal, with adequate depth of water, can be made at reasonable expense across the peninsula of Florida from the Gulf of Mexico to the Atlantic Ocean. The ship-canal, in order to answer the purposes wanted, must have properly-protected terminal harbors, with sufficient depth of water. The canal, if compelled to traverse elevated districts, must surmount the elevation by locks supplied by lakes or reservoirs. If, however, the canal can pass through districts with slight elevation above tide-water, it may be made on a uniform level, and be supplied with water from the Gulf and ocean. Its ends will either have to be protected by guard-locks, or the canal will communicate freely with the Gulf and ocean without guard-locks, as circumstances may require. It is evident that if the canal can be constructed on a level from the Gulf to the ocean, it will be more efficient in every respect than if it has to overcome an elevation. From all the information I can collect, and from conversations had with persons who have visited the country, I am induced to believe that a very efficient ship-canal, with adequate depth of water, can be made at no great cost across the peninsula of Florida, from the Gulf of Mexico to the Atlantic Ocean. Tampa Bay, on the Gulf side of Florida affords a naturally well-protected harbor, with ample depth of water for freights. The bar obstructing the entrance has two clear and well-defined channels through it, one of which has a least depth of water of 19½ feet. This channel can probably be permanently deepened. No works to protect vessels from winds and waves in storms will be required in this harbor. East of Tampa Bay, in a distance of one hundred and twenty-five miles across the peninsula, at its narrowest part, with one exception, the maps show on the Atlantic coast of Florida depths of 27 and 28 feet water quite close to shore, and thence to the broad expanse of the Atlantic a free and unobstructed way for vessels. A breakwater will be here required to form an artificial harbor of protection for vessels. The land intervening between these two points on the Gulf and Atlantic is described to me by an intelligent gentleman who has been over it, as being level, with only a few feet elevation above tide-water, and as presenting no obstacles of moment to the construction of a canal that can be supplied with water from the Gulf and ocean, and that will permit the free transit of all vessels which can enter the terminal harbors. The first thing to be done for the accomplishment of this important project is to have a thorough reconnaissance made for the canal. This reconnaissance is a necessary preliminary of a survey, and cannot cost much. If executed properly, it will demonstrate the practicability or impracticability of the canal. It will also determine whether it is worth while to expend money in making an instrumental survey; and it will, besides, indicate the routes for

the canal which should be instrumentally examined. In a national point of view the importance of this ship-canal cannot be overrated. The passage around the southern point of Florida, which vessels engaged in the North Atlantic trade, entering and leaving the Gulf, are compelled to make for about five hundred miles, is narrow, subject to tornadoes, and is beset with concealed reefs, upon which a rapid current has a tendency to carry vessels. The consequent dangers are such that it costs on an average three-eighths of one per cent. more to insure for a Gulf than for an Atlantic port. Twenty-five years ago the Acting Secretary of the Treasury estimated the amount of commerce compelled to use this passage at \$320,000,000 per annum. Three-eighths of one per cent. on this would give \$2,376,000 as the increased amount of insurance which must be paid annually on account of the dangers of the straits of Florida. This tax would, in ten years or less time, amount to a sum sufficient, in all probability, to pay for the entire cost of the canal, and would in a great measure be saved by its possession. Nor is this the only saving that would be effected by the canal. A large additional saving to commerce will be accomplished from the use by vessels of the short and uninterrupted passage across Florida by the ship-canal instead of the long and obstructed passage around the peninsula now used. A work which will cause these savings to the nation ought certainly to be considered pre-eminently a national work. There is another consideration which makes this canal highly important in a national point of view. One side of the pass around Florida belongs to a foreign power, and its possession, in time of war, by a capable hostile power, would cause serious losses to the United States, producing perhaps an entire interruption of commercial communications by water with the Gulf. The Florida ship-canal, passing, for its entire length, through the territory of the United States, may be rendered impregnable, so to speak, and would prevent this interruption of commercial communications with the Gulf. The Florida ship-canal will be valuable to Mobile not only on account of savings to her business, in insurance, &c., but because it will afford throughout cheap water-transportation to her route of commerce, while the routes of commerce of the South Atlantic ports must, of necessity, have expensive transportation by railroad. Assuming Selma as the point at which commences competition between Mobile and the ports of the South Atlantic for the trade of the interior, the proposed canal will substitute 1,050 miles of water-transportation by river, ship-canal, and ocean on the Mobile route for 437 miles of railroad and 170 miles of ocean transportation on the route via Savannah. Considering the cost of water-transportation by ocean—good river and ship-canal is at least eight times cheaper than that of railroad transportation—it is clear that Mobile will enjoy from the canal great advantages over the South Atlantic ports in competing for the trade of the interior.

Very respectfully, your obedient servant,

PRICE WILLIAMS, Esq., *President Mobile Board of Trade.*

I have heard some crude estimates made, for which I cannot vouch, that it would cost, perhaps, \$7,000,000 to build that canal. The points to be considered are, first, getting a proper outlet on the Gulf and Atlantic coasts. Our shores are shallow generally, and we must have a harbor on either side, and it has been suggested that this Saint Mark's Bay route and through the Saint John's River would give us ample draught of water to admit vessels suitable for the trade. We do not require big ships.

Question. You can get an outlet from the Suwanee River into the Gulf?

Answer. Yes, sir; the idea was not to use that, but to take some little stream before you get to the Suwanee going down the coast, which they call the Little Warrior River, making a canal of that. The idea occurred to us that, if the Government would undertake the work, it would involve these general interests to which I have referred, and then a small charge would in time liquidate the whole expense and keep the canal in order. I believe a petition has already been presented to Congress for a survey.

Examination of Hon. PRICE WILLIAMS.

Mr. WILLIAMS. Mr. Chairman, the subject assigned to me is the opening of the bay and harbor of Mobile. This is a question which

you will doubtless recollect has frequently been before your body, and several appropriations have been made for our benefit.

By Mr. WEST :

Question. How much money was appropriated last year ?

Answer. One hundred thousand dollars.

Without entering upon any details to show the importance of opening the river and harbor of Mobile, so indispensable to the commerce of a large portion of the Southern and Western States, the commercial advantages of Mobile, as an *entrepôt* of imports and exports, and as a great coaling depot, will be shown by the various reports which will be presented by my committee at our present sitting.

WIDTH OF CHANNEL.

General Reese, in his report to the Chief of Engineers, at Washington, D. C., recommended the opening of Choctaw Pass Bar and the Dog River Bar to a width of 300 feet. (See report of 1871, page 559.)

General Simpson, the local engineer who followed General Reese, recommended the opening of Choctaw Pass Bar to a width of 200 feet and that of Dog River Bar 250 feet, with a depth of 13 feet to both. (Same report, page 560.)

The board of engineers which met in Mobile in February, 1872, under special commission to inspect these works, reported and recommended a width of 200 feet through both bars until a comparative permanency of the work can be tested. (See General Simpson's report to chief engineer, 1872, page 592.)

If the dredging shall prove a success no doubt the engineering department will recommend them to be opened as recommended by General Reese, to a width of 300 feet.

APPROPRIATIONS BY CONGRESS.

1. July 11, 1870	\$50 000
2. March 3, 1871.....	50 000
3. June 10, 1872.....	75 000
4. March 3, 1873.....	100 000
	<hr/>
	275 000

APPROPRIATION BY STATE BOARD.

Expended in dredging, removing obstructions, constructing jettées, &c.,
about..... \$200 000

Additional appropriation asked for of Congress at the present session 145 000

With this it is expected to complete the dredging through both bars, 200 feet wide and 13 feet deep, at mean low tide. This, at high tide, will admit vessels drawing 15 feet water.

CONTRACTS.

The first contracts were awarded Capt. John Grant, in 1870, at 50 cents per cubic yard, for excavating.

The second to Mr. S. N. Kimball, in 1871, at 39½ cents per cubic yard.

The third to Capt. John Grant, in 1872, at 30 cents per cubic yard.

The fourth to Capt. John Grant, in 1873, at 23 cents per cubic yard.

Mr. S. N. Kimball did the most of the work with his improved Osgood dredge on these contracts.

PROGRESS.

The Choctaw Pass Bar has been opened 200 feet wide and 13 feet deep, but has been somewhat obstructed by the wash of sand. The Dog River Bar channel has been cut its whole length 60 feet wide and 13 feet deep.

Under the fourth contract work is now being executed on the Dog River Bar channel in opening it to a width of 120 feet, and it is supposed that this channel will be completed 120 feet wide, 13 feet deep, and the obstructions in Choctaw Point channel

removed by the first of the summer of 1874, out of the last appropriation of \$100,000 made in March, 1873. I am placed under obligations to Major Damrell for concise tabular statement of appropriations by Congress, the prices for different contracts, amount of excavations, results, &c., marked Exhibit A.

Additional appropriation asked.

The Chief Engineer has asked of Congress an additional appropriation of \$145,000, an amount which it is supposed will complete the Dog River Bar channel to a width of 200 feet and a depth of 13 feet. This is important as it will close out the present plan of work during the next year.

We present Mobile with its water-outlets and its tributaries by rivers and railroads as one of the prominent national points. We would ask the Transportation Committee to take this point into serious consideration while they are making reconnaissances in the South and West with a view of supplying the growing wants of these sections with a well-digested plan of transportation.

Mobile, we believe, must be the great coaling depot for steamers plying between the Atlantic and Pacific ports; Alabama abounds with the best of coal for generating steam, and Mobile is the most accessible point for its outlet.

It is the opinion of many persons whose views are worthy of consideration that one of the water-connections between the West and the Gulf of Mexico and Atlantic Ocean, by rivers, canals, and locks will be via Mobile.

All which is respectfully submitted December 22, 1873.

EXHIBIT A.

Number.	Amount.	Date.	Contractors.	Per cubic yard.	Date of commencement work.	Date of completion work.	Amount excavated.		Total.	Result.			
							Choctaw Pass.	Dog River Bar.		Choctaw Pass.		Dog River Bar.	
							Cub. yds.	Cub. yds.		Depth.	Width.	Depth.	Width.
1	\$50,000	July 11, 1870	John Grant.	\$0 50	Sept. 20, 1870	April —, 1873	74,454	74,454					
2	50,000	Mar. 3, 1871	S. N. Kimball.	0 39½	Jan. 2, 1873	Aug. —, 1873	37,344	87,535	104,879	13	200		
3	75,000	June 10, 1872	John Grant.	0 30	Dec. —, 1873	July —, 1873		135,691	135,691			13	60
4	100,000	Mar. 3, 1873	John Grant.	0 23	Aug. —, 1873	Still at work.		146,433	146,433			13	120
5	145,000	Asked for.										13	200
			Total.				111,798	349,659	461,457				

REMARKS.—In February and March, 1873, a bar formed across the cut in Choctaw Pass, (about 36,000 cubic yards.) Bids for re-opening it have been forwarded and are awaiting the action of the proper authorities. Lowest bid 45 cents per cubic yard. State harbor board widened gaps in the obstructions to 600 feet, dredged a cut 60 feet wide and 13 feet deep from the lower turn stake, south, to the upper fleet; closed Pinto Pass by a dike, and built a jetty south from the south end of Pinto Island, and three in Garrow's Bend. The cut through Dog River Bar is 17,000 feet of its length, of a width of 120 feet. The entire length of the channel requiring dredging is about seven and three-fourths miles.

By Mr. WEST :

Question. How much water have you in your lower bay ?

Answer. There is 21 to 23 feet of water on the lower bar.

Question. How close can a vessel drawing 21 or 22 feet come to the City of Mobile ?

Answer. Twenty-six miles.

Question. Twenty-six miles to the head of your lower bay ?

Answer. Yes, sir.

Question. And these improvements that you speak of connect the upper bay with the lower bay ?

Answer. Yes, sir ; and connect the city with the lower bay.

Mr. STEWART. There is a pocket about four miles long ; what is called Dog River Bar is not a bar. When the rivers come in they flow in different channels, and it widens suddenly into a broad bay. The sand deposits there, and it is uniform all the way across. They call it Dog River Bar, but it is not a particular bar. We cut through that and get into deep water. It deepens gradually all the way down. It is a pocket, and that pocket is soft black mud. It is a good ground, perfectly safe, and large vessels lie there. Dog River Bar is nine miles from town, but it deepens gradually.

By Mr. CONOVER :

Question. What depth of water is there now over the shallowest bar coming to the city ?

Answer. About 13 feet now, with the exception of the one at Choctaw Pass Bar, which is just at the lower edge of the city. That has been somewhat filled up by cross currents, but there is a Government order here to have it opened, and it will be opened very soon. There is a channel now 13 feet deep at mean low tide ; at high tide 15 feet. The lower channel is now only 60 feet wide, but is now being excavated to 120 feet. We want a sufficient appropriation to widen it to 200 feet.

By the CHAIRMAN :

Question. How do you propose to get from the lower bay to the City of Mobile ? Will you have to lighter ?

Answer. Yes, sir, in the case of vessels drawing above 15 feet of water. Of course the larger vessels cannot come beyond that, but it is in anticipation that a class of vessels will be built for the commercial ports here that will pass over these bars, when they are completed to thirteen feet, mean low tide.

Examination of Mr. THOMAS A. HAMILTON.

Mr. HAMILTON. Mr. Chairman, I am sorry that I have not had time to write out upon this subject what I would have liked. I take it, in reference to all these matters, if the committee will pardon me, that the main thing to be borne in mind, perhaps, is, the want of the country, and the facilities that Mobile Bay, or any other point, will furnish for the general good of the whole. Now the West, as we understand it, are seeking transportation. We all see the pressure for getting the produce of the West to a port, and particularly to foreign ports, and we see how the Erie Canal has been crowded. We see the efforts being made to use the Canada route, and efforts made also to bring into use a route across the State of Virginia. This brings up at once, and naturally to us who are upon the Gulf, the question of what facilities may be afforded by Gulf ports. In that connection, believing as we do that Mobile is, by all odds, the best port on the Gulf of Mexico, and

equal, perhaps, to almost any port in the country to be used for purposes of foreign transportation, it becomes important that we should consider what may be necessary to utilize that in connection with this demand for transportation of western produce more particularly. In looking at that we see at once, knowing as we do that water-transportation is much cheaper than railroad transportation, and knowing, too, that transportation through a country which is not frozen up in the winter season is to be preferred to one which is frozen up for several months, at least, in the year, and then observing that our position lies in a way connected with the Mississippi River, which is the grand natural outlet for the West, and which is never closed, at least through a large portion of its extent, by ice, and observing that at the mouth of the Mississippi River there is difficulty, the question comes in reference to Mobile, cannot this be made available, and very largely so, to relieve this great trouble at the West?

In connection with that also, come up some other questions; that is, the value of the harbor of Mobile for commercial purposes, and its connection with commercial products. The State of Alabama, as we are satisfied, and as I believe the whole country is now satisfied, is rich in mineral products, no State, probably, more so. Iron and coal in the greatest abundance exist in close proximity to each other and cover a large portion of the State of Alabama, which, owing to circumstances, has not yet been opened to market, but which, in all probability, very soon will be, at least, to a degree. The demands of commerce for steam navigation must inevitably bring this coal into demand, and there is no point where it can be so well furnished as at Mobile. That coal is in existence, as I have stated, in the largest imaginable abundance in certain portions of the State of Alabama. And in that same connection, iron, with its great uses, and under present circumstances the failure of iron, at least in England, and questions arising where it can be made cheapest and best; and as we believe that it can really be gotten cheaper in Alabama than in Pennsylvania, or anywhere else in this country, it brings that as a matter likely to be prominent in the future of the whole country.

By Mr. DAVIS:

Question. State the distance at which you find that coal and iron.

Answer. Inasmuch as there is another committee charged with that, I propose to state this only in a general way, as showing the importance of the harbor of Mobile as being used in the other connection, and also in connection with our own products.

Now, if there were nothing to be considered but the demands purely of the West, and these others I only mention as incidental, the question occurs, how can Mobile and its harbor be made useful? In New Orleans, according to my recollection, certainly there is always trouble in getting vessels of any considerable draught out and in. New Orleans itself lies some hundred miles from the mouth of the Mississippi. My recollection is that the depth of water to be relied upon at their outer bar is not more than 16 feet. If I am wrong I will be glad to be corrected.

Mr. WEST. That is natural depth.

Answer. Yes, sir; and seems to be an impossibility with the tremendous current, &c., of that river, and its continual deposit of sediment, as it flows outward, or next to an impossibility, at all events, to remedy that trouble. The way never has yet been found. When we look at Mobile we find a perfectly secure anchorage; a harbor large enough to

contain any number of vessels, and where water is of at least equal depth with any water they can bring over the outer bar.

The quantity of water on the outer bar will be shown accurately by the Coast Survey; my recollection is 21 to 22 feet. Higher up in the bay the water shoals, it is true, so that they cannot bring to the city now more than 13 feet. That will be remedied, I suppose, to some extent.

Now, can this harbor be used for the benefit of carrying abroad the commerce of the west? To answer that it might be necessary only to say that it has happened, and does happen now, that cotton comes frequently from New Orleans, or not unfrequently from New Orleans, to be loaded on large vessels in Mobile Bay to go abroad. I will not say that is an every-day occurrence, but it does happen. Then, when we look to see, we find that at the Pass Manchac, during the war of 1812, there was a natural outlet and communication between the Mississippi River and Lake Pontchartrain, and Lake Pontchartrain connects directly, or almost directly—it does through Grand Pass directly—with the waters of Mobile Bay. That pass was closed by General Jackson for the purpose of national defense, and only for the purpose of national defense. That pass has remained closed from that day to this. What has been once of course may be again, and it seems to us that inasmuch as that was closed for national purposes, it is only right that it should be opened again when it will afford relief to a national trouble.

In looking to see how that matter stands I find, and here is the report, that some years ago the report was made by direction of Congress upon an examination of the cost and trouble of opening that communication with Mobile Bay, &c.

Having reached this point, I propose now to read what was formerly a report written by my friend Colonel Stewart upon this subject a great deal more carefully than I have had time to do it now:

The report, however, shows that a lock is necessary, with auxiliary locks at the Mississippi River, to control the flow of its water into the Bayou. The reason is that the Mississippi rises, in high water, to a great height—say, in 1862, a height of 32 feet above low water at that point. This corroborates the view we had entertained, that such a lock was necessary for several reasons: first, to prevent the flooding of the low lands on the Bayou and Amite; second, to prevent the carrying of mud into the lakes; and third, because a flood at high water would create too rapid a current in the Bayou—whereas the great merit of the Manchac route is that the river is reached at that point with slack-water navigation.

The estimate for this lock and its auxiliaries is set forth as follows:

Piles	\$91,000 00
Superstructure.....	159,008 00
Three flood-gates, &c.....	72,368 60
Machinery to work flood-gates.....	30,000 00

1,352,408 60

Making the grand total of the whole work, for the navigation of first-class steam-boats, ready for use, \$3,800,444.45.

This, then, is the result of the report returned to the inquiry of the Senate, showing that the object is a practicable one, to be accomplished at a cost trifling, when compared with the results it would produce.

In the discussion of this matter in the West, and also in the report above mentioned, there have been differences expressed as to the proper point for the opening to be made in the Mississippi. The report proposes other points as more favorable—say one above New Orleans at Bonnet Carré, and another below New Orleans from the English Turp into Lake Borgne. The reason given is that at those points the river does not rise so high, and therefore, although the land is alluvial, it is said it can be done at less cost. To this we of Mobile may well say that it is indifferent to us where the communication is opened, so that it be opened, and we may leave the question as to where, to be settled between the people of the West and Louisiana. We will only

remark that as to Bayou Manchac, we have the right to demand that it be opened, as it was a natural channel and closed artificially for purposes of defense, which creates the duty, in justice to us, to restore to us the natural flow of the water after the necessity ceased.

Your delegation, in respect to the means by which this communication shall be restored, urged the propriety and duty of Congress to have the pass opened, because it is our right and because the passage should be made free for all vessels without charge. Formerly Bayou Manchac was a natural outlet of the Mississippi, leaving the river at a point over two hundred miles from the Balize, and about twelve miles below Baton Rouge, and running in an eastward direction, about twenty-two miles, till it fell into the Amite River; running down the Amite River to Lake Maurepas, say thirty-five or forty miles. The route then crosses that lake, which, by the Pass Manchac, communicates with Lake Pontchartrain, crossing which the pass called the Rigolets leads into the Mississippi Sound.

At the present time Bayou Manchac is navigable to a point where Bayou Crocodile falls into it, say eight miles from the Mississippi. From this point down, the land is flat and level, but from here to the great river the land rises; the bayou passes through a region of stiff blue clay, the banks of the bayou are steep and often perpendicular, and at Bayou Crocodile are about 10 feet high, and the river bank at the Mississippi is about 28 feet high, with a levee on the top of it. From a depth of about 7 feet at Bayou Crocodile, the water shallows, till at the Mississippi bank it is now dry at low water. The water flowed through formerly, but now the bayou has been partially filled by washing of earth and growth, so that if the obstruction at the river was opened, it would require a rise of 13 feet 6 inches to throw the water through the bayou. The level of the tide-water comes up to Bayou Crocodile, and this level is 2 feet and $\frac{1}{4}$ of an inch below the level of the Mississippi at its extreme low-water line.

On the Bayou Manchac and in the Amite River there is no current; the current is moved either way by the wind. At times, high water comes down the Amite, which backs up the water in the bayou up to the Mississippi, but it soon runs out. Consequently, it is seen that the navigation from the sound up to Bayou Crocodile is one of slack-water, without current. A small steamer is now running on the Bayou Manchac up to Ward's Creek with 7 feet of water, to which point the bayou has been cleared out by cutting the logs, stooping trees, &c.

Your committee were furnished by Colonel Shryock with a copy of a report made from the Engineer Department of the Army, communicated to the Senate of the United States by the Secretary of War on the 25th of January, 1868. The Senate, on the 11th of March, 1867, passed a resolution directing the Secretary of War "to detail an officer of the Engineer Corps of the Army for the purpose of surveying Bayou Manchac, connecting with the Amite River and leading into Lake Maurepas and Lake Pontchartrain, and report the cost of opening these streams with bayous to first-class steamboat navigation." This survey was made in 1867 by Lieutenant Heslip, and the surveys, plats, maps, and estimates were returned and laid before the Senate. This report was read in the Senate on the 27th January last, ordered to be printed, and referred to the Committee on Commerce, and on the 27th of February, 1868, 3,000 additional copies were ordered to be printed. (See Fortieth Congress, second session, Senate Ex. Doc. No. 31.) A copy of this report with the maps and plans is herewith filed.

From this report it is shown that in order to open this channel for first-class steamboats, the cost will be as follows, premising this statement with what was considered in this connection first-class steamboats, as to which the steamer Mary, the largest of the steamers of the mail-line plying between Mobile and New Orleans, was taken as the standard, say 235 feet long, 60 feet beam, including guards, and 6 feet 6 inches draught for ordinary boats, such as may navigate the sounds and lakes:

Cost of surveys and laying out the work.....	\$10,000 00
Clearing and felling timber along the route.....	4,500 00
Clearing out bars in Lakes Pontchartrain and Maurepas and Bayou Manchac from Bayou Crocodile down.....	629,724 25
Clearing out drift-wood out of Bayou Manchac, 8 miles.....	1,600 00
Excavations for canal from Bayou Crocodile to the Mississippi.....	2,052,219 60
Total clearing out.....	2,698,043 85

I will state to the committee that from an examination of those surveys and reports it would seem that one of these other lines would be very much cheaper, costing not exceeding, apparently, \$800,000, and, as a matter of course, so far as the country is concerned, it is of no consequence where the connection is made, provided the outlet is made which gives the benefit of Mobile Harbor to the commerce which de-

mands that outlet. Therefore it would seem very likely that one of these other routes may be the better course to be pursued. The difficulty possibly to be apprehended about that would be that New Orleans, or whoever the owners of that canal at present in operation may be, would say, "This is our private property;" and they might say, also, with reference to a movement in the State of Louisiana, and confined to the State of Louisiana, that that was a thing which the State of Louisiana should control. As to these matters, of course they are matters for the consideration of you, gentlemen, and those in authority. But there is certainly the route that can be opened, and there is a route which, in case there is any difficulty in the way of any others, it seems to me that the whole country has a right to demand should be opened, and opened in such a way as to be free of cost to the commerce desiring to use it.

By Mr. WEST:

Question. Are you prepared to say that precisely the same character of steamboat that loads produce at Saint Louis is capable of navigating Lake Pontchartrain and the Mississippi Sound?

Answer. I will undertake to say this, that for years as fine boats as any that I have met with in the country, although I will not say as large, so far as draught of water is concerned, as some of these fine boats on the Mississippi, navigated here for years and years and years, between Mobile and New Orleans, going through Grant's Pass and the Mississippi Sound and Lake Pontchartrain without any imaginable trouble.

Examination of Mr. ANDREW M. DAMRELL, United States Engineer Corps.

By Mr. SHERMAN:

Question. What is the distance from Mobile to the outer bar?

Answer. Thirty-three miles. It is thirty-five miles to the outer bar buoy.

Question. Which would be called the outer bar?

Answer. Thirty-five miles is where they take their course; that is, beyond the bar where vessels shape their course for any other port.

Question. What distance is it from there to the outer fleet or outer bay?

Answer. It is about six miles to the lower edge.

Question. What is the character of the channel—what depth of water have you?

Answer. Twenty-one feet is the least at mean low tide.

Question. What is the general depth of water in the lower fleet—the maximum and minimum?

Answer. The minimum is 19 feet; the maximum is 22 feet.

Question. What do you call the space between the upper and lower fleet?

Answer. There is no name given to that.

Question. That is a bar, is it?

Answer. No, sir; that is a very level surface on the bottom, with a depth of about 13 feet.

Question. What is the distance between the lower fleet and the upper fleet or bay?

Answer. Fifteen miles.

Question. What is the size of the upper fleet?

Answer. It is about four square miles.

Question. What are the soundings?

Answer. Thirteen feet depth.

Question. What is the character of the channel from the upper fleet to the landing?

Answer. There are two bars called Dog River Bar and Choctaw Pass Bar.

Question. What part of the channel are you making improvements upon now?

Answer. On both of the bars mentioned.

Question. What is the length of the work between the upper and lower fleet—the length of your dredging?

Answer. It is from the city to the upper fleet.

Question. Have you any dredging below?

Answer. No, sir; there is 13 feet of water below.

Question. You are now dredging from the upper fleet to the landing?

Answer. Yes, sir.

Question. What is that distance?

Answer. Seven and a half miles.

Question. To what extent has that improvement been now made?

Answer. Choctaw Pass has been opened to a width of 200 feet and a depth of 13 feet.

Question. How about the other?

Answer. Dog-River bar has been opened to a depth of 13 feet and a width of 60 feet way through, and about half-way through to a width of 120 feet, and a depth of 13 feet.

Question. What is the ordinary course of a ship coming from Liverpool? It remains in the outer fleet and is loaded by lighters, is it?

Answer. Yes, sir.

Question. Is the anchorage good?

Answer. Very good. There is none better on the coast.

Question. What is the description of the map of the coast-survey which gives the detail of Mobile Bay? Is there any particular number given to it?

Answer. No, sir. It is the coast-survey chart of Mobile Bay, dated 1864. The channel that was dug or dredged through Choctaw Pass has filled in since it was dredged, or partially so. The estimate of the amount of filling is 36,000 cubic yards since it was opened.

Question. What is the drainage into the bay from the rivers? Is there any mud like the Mississippi streams carry down?

Answer. Yes, sir. There is some.

Question. What is the general character of the water on those streams? Water like the Mississippi?

Answer. There is not so much sediment in the water here as in the Mississippi.

Question. They bring down more or less sediment always?

Answer. Yes, sir; more or less.

By the CHAIRMAN:

Question. During what length of time has that filling taken place?

Answer. It all filled during a freshet in a few days.

By Mr. WILLIAMS, (to the witness:)

You think from your report adopted by the United States Engineer Corps, that this will be remedied hereafter by certain work which they have assigned to your Department?

Answer. I think it will.

Mr. HAMILTON. I might state that many years ago there was dredging done over Dog-River Bar, in 1839 or 1840, or thereabouts, under the direction of the United States Government, and up to the time of the war the statements were that that water still remained the same, and that there had been no filling in at this place. I think that was the general understanding that that dredging had stood without any diminution of the water.

By Mr. DAVIS, (to Major Damrell :)

Question. Is there any obstruction which was caused during the war?

Answer. Yes, sir, there are several, but not at the present time to interfere with the commerce of the port.

Question. Had the bars that you speak of been cleaned or dredged, previous to your doing it, at any time before the war?

Answer. Yes, sir; there has been dredging done in Choctaw Pass and on Dog-River Bar.

Question. Had it filled up?

Answer. At a very slow rate; the exact rate I do not know. We have no means of determining except what I have heard from other parties.

Question. Do I understand you correctly, that it is thirty-three miles from here to the sea?

Answer. Thirty-five miles to what a sailor would call the sea, that is to the outer-bar buoy.

Question. Then you cross over the outer bar with 21 feet minimum?

Answer. Yes, sir, at mean low tide.

Question. How far do you come 21 feet before you are reduced to 13 feet.

Answer. About ten miles.

Question. From that up to the city 13-foot vessels can come at all times, I understand you?

Answer. Except in Choctaw Pass, where filling has taken place since dredging.

Question. What depth is there?

Answer. About 9 feet now.

Question. Do I understand you to say that 9 feet is as large a draught of vessel as can come up?

Answer. Yes, sir; at low-tide through Choctaw Pass. More can be carried through Spanish River.

Question. What is Spanish River?

Answer. It is a stream running from Mobile River into the bay—to the eastward of it.

Question. What is the largest vessel which can now come into the bay by any route, and reach this city, coming here to load at your wharves?

Answer. Do you mean at any time?

Question. Yes, at any ordinary tide.

Answer. I think about 10 feet at ordinary tide.

Question. You speak of the pass being 9 feet, do you contemplate with your present appropriation making it 13 feet?

Answer. By the first of next May it will be open to 13 feet.

Question. With your present appropriation?

Answer. Yes, sir.

Question. Will that be permanent, or will it be changing from year to year?

Answer. It is absolutely impossible to answer that question.

Question. What is your opinion ?

Answer. My opinion is that it will fill slowly.

Question. What do you call slowly ?

Answer. About 2 inches a year.

Mr. STEWART. There are two modes of reaching Mobile, one by this, and the other by the Spanish River. The large vessels all come round by the Spanish River.

The WITNESS. The question was by any route.

By Mr. DAVIS :

Question. That is it. I wish to find the true position of your bay, what it is to-day and what it is likely to be. You say it has filled in ; to what extent has it filled in ; what was the depth on the bar here previous to its filling in ?

Answer. Thirteen feet when the bar formed.

Question. Now, if it filled in in a year from 13 so that you can get but 9, by what mode do you calculate that it would fill in but 2 inches, in future, per annum ?

Answer. There are two works which were constructed while this improvement was going on, which, I think, caused the greater portion of the filling. We propose to remove those two works.

Question. I understand that you have asked for an additional appropriation of \$145,000.

Answer. Yes, sir.

Question. How is that to be expended ?

Answer. In widening the cut through Dog River Bar. The first cut through was 60 feet. It is now being widened to 120 feet under the present appropriation. The appropriation asked for is intended to widen it to 200 feet.

Question. What particular advantage would it be to have it 200 feet instead of 120 feet wide ?

Answer. The wider it is the better it will be for commerce. Two hundred feet was adopted as the minimum for convenience. The width is merely a matter of convenience for the commerce.

Question. Would it add anything to the commerce

Answer. If it was 120 feet wide vessels would be much more likely to get aground in it, and, possibly, fill it up. The greater the width the less difficulty there would be in navigating it.

By Mr. WILLIAMS, (to the witness :)

Question. You said just now that perhaps a vessel could not come to this city drawing over 10 feet. Where would it come to the obstruction between 13 and 10 feet.

Answer. It would be at the mouth of Spanish River.

Question. There is a bar at the mouth of Spanish River of 10 feet ?

Answer. Yes, sir ; it is about that.

Question. But when you get this open in May, vessels drawing 13 feet can come in ?

Answer. Yes, sir.

By Mr. WEST :

Question. I understood you to say that you proposed to use the appropriation for the next fiscal year for the purpose of clearing out Dog River bar from a width of 120 feet to 200 feet ?

Answer. Yes, sir.

Question. How much of your unexpended appropriation have you now, to relieve Choctaw Pass ?

Answer. Less than \$25,000; about \$23,000.

Question. Will \$23,000 open Choctaw Pass to 13 feet and relieve it of this filling which comes in with the freshet?

Answer. Yes, sir.

Question. How wide will Choctaw Pass be?

Answer. Two hundred feet.

Question. So, with your unexpended appropriation of this year and your \$145,000 of next year you will have both Choctaw Pass and Dog River Bar open to 200 feet?

Answer. Yes, sir.

By Mr. HAMILTON.

Question. The State expended some money on this same work, did it not?

Answer. Yes, sir.

Question. Do you know how much?

Answer. I do not.

Question. Was it not \$200,000?

Answer. I have no idea.

Mr. WILLIAMS. It was \$200,000.

Examination of Hon. ABRAHAM MURDOCK, president of the Mobile and Ohio Railroad, upon the subject of internal water-communications and railroad-communications of Mobile:

Mr. MURDOCK: Mr. Chairman, the subject assigned to me was particularly the water-communication with the city and the railroad-communications with the city. There has been for the last twenty or twenty-five years a project on foot with the people of the interior to connect the waters of the Tennessee with the waters of the Tombigbee, the Tombigbee being one of the rivers flowing into this city. The Tombigbee River is navigable ordinarily about four months in the year, and that in the winter season; generally commencing about the middle of December, and running on for four months, after which time it ceases altogether to be navigable.

By the CHAIRMAN:

Question. To what point is it navigable during that time?

Answer. As high up as Aberdeen, a distance of about five hundred and twenty-five miles from water. The Tombigbee, as well as the Warrior and a portion of the Alabama, runs through the finest cotton-belt on the American continent. It is true we have some railroads now penetrating that belt, but still river-communication is extremely desirable. The river bottoms are of immense fertility, and to a very large extent have been and still are in cultivation, and the people residing along the line of these great rivers need a communication other than railroads; that is to say, it is too far East and West for them to get to the railroads. There has been a recent survey made by order of the Government, a copy of which probably will be furnished to your committee. A more elaborate report and memorial to Congress on this subject will be sent from some of the interior boards of trade. Those, when they reach you, will probably give more detailed information than I can furnish you. The presumption is, however, that by the cutting of a canal from eight to twelve miles, the waters of the Tennessee can be turned into the waters of the Tombigbee, and tidewater reached thereby at all seasons. This would directly benefit a portion of North Carolina, a portion of Virginia, and a large portion of Tennessee, Alabama, and Mississippi.

By the CHAIRMAN :

Question. What sort of country is that through which your canal would have to be cut? Is it level?

Answer. No, sir; there is a chain of hills running through there, but it is said that, without a circuitous route, a gap can be found. I am not conversant enough with the locality to tell you precisely where, but those who have made preliminary surveys assure me that, not to exceed twelve, and somewhere from eight to twelve miles will do. The Tennessee River is higher than the Tombigbee River, sufficiently so, they all agree, to make a very pretty fall, and ample for the purposes needed. This would be tapping the Tennessee River below the famous Muscle Shoals, which you are aware make a perfect barrier to navigation above it, and would unquestionably give navigation all the way to tide-water the whole twelve months in the year.

I need hardly call your attention to the importance of our rivers being kept open the entire year, because we are never obstructed by ice. If we can have water we can navigate the whole year round. The importance of reaching tide-water is very great to those who are pursuing the cultivation of cotton, which is the main product along the banks of these rivers, from the fact that it is a commodity so bulky that it is difficult to get to market. If they have to haul it a great distance it becomes a tax too onerous to be borne.

But I suppose it is admitted by all the members of the board here, and by all the boards of the interior, that the most important thing we can expect to obtain from Congress is this great ship-canal across the capes of Florida. I take it for granted that it is understood perfectly that, at no very distant day, the entire commerce of the West Indies and South America with the great empire of the west has got to be done through gulf ports. New Orleans, Mobile, and Pensacola are those three great gulf ports, as we all know. The reason that this commerce will pass through them in the future is from the fact that it is shorter and consequently quicker and cheaper. In anticipation of that fact the internal channels of trade have all been constructed. From this city you have first the Mobile and Ohio Railroad, which starts at Mobile and runs virtually to Cairo, passing through seven degrees of latitude, through the entire cotton-belt and into the grain region of the West, and then, branching off to Saint Louis, it forms an unbroken rail connection with the Pacific Ocean. Saint Louis is reached from the gulf ports after you have this West India and South American produce at five hundred miles less haul than from New York City; and when I say Mobile, New Orleans will come in under the same heading, for it is about the same thing. Chicago is reached at about a hundred and twenty-five miles less haul; Cincinnati will be reached by two hundred and seventy-five miles less haul. To-day both Mobile and New Orleans, through her great trunk lines of railroads, are in unbroken railroad communication with all the great cities of the West. I could have shown you yesterday coffee directly imported from Rio, going to Cincinnati, which had never touched ground in this country at all; landed alongside of the wharf and taken right on to the cars. With Cincinnati, Saint Louis, Louisville, and all the cities of the West, the gulf cities of Mobile and New Orleans both have this unbroken rail communication.

The only thing that interferes is the want of communication with the outside world. We are supposing that the improvements which Congress has already taken hold of in relation to our harbor will benefit us

very largely to that extent, and when I speak of benefit to us, I speak of benefit to the entire West, for I am supposing that there is no harbor improvement on the American continent in which so many States are directly interested as in the harbors of Mobile and New Orleans.

Again, when we talk about western produce and its shipment intended for the West Indies, we have now a rail-communication, and if we can improve our water-communication we can settle the question of cheap freights so far as the West is concerned. Our railroads penetrate on the east the coal and iron regions. The Mobile and Montgomery connecting with the South and North road at Montgomery, runs directly through the coal and iron fields.

By Mr. SHERMAN:

Question. If you are familiar with the extent of that coal-field, describe it if you please.

Answer. It is almost boundless, and having been engaged a little in the iron business, I desire to make a single remark in relation to Alabama iron. The remarkable thing in relation to the coal and iron fields of Alabama is what is not found perhaps in the civilized world—that the iron and the coal and the lime, which is the flux, as everybody knows, is all found so that you may almost throw a stone from one to the other. When you take up the question of Alabama iron, therefore, you have just such a question as long and short staple cotton. The great bulk of the iron ores of Alabama are the brown hematite, not so rich in yield as the Missouri ores, particularly from the Iron Mountains, and some others, but of such a fine quality that they command a much higher price. For instance, at the present moment Alabama pig-iron will probably bring \$50 at Saint Louis, while Iron Mountain pig-iron would not bring over \$40. In other words, they must have a portion of this fine iron to mix with their common ores in order to produce a large portion of their articles.

It becomes then, as I remarked, just such a question as long and short staple cotton for all the world. It has been shown by experience that iron can be produced in Alabama at a less price than in Wales. The English who are now located on the line agree to it. But to go back to the other routes by which they are reached. I said first the Mobile and Montgomery, connecting at Montgomery, runs through the coal region. The Mobile and Ohio, at Meridian, in Mississippi, unites with the Alabama and Chattanooga, and that runs the entire length of the coal and iron region. In addition to that, there is now in process of construction what is called the Alabama Grand Trunk Road, that starts from Mobile, and is now completed about sixty miles, and runs by a still shorter line into this same region. There can be no question, even to-day, but what the internal railroad facilities are sufficient to bring all the iron and coal, not only for the steamers, but for foreign export, and I call foreign everything out of the State for the present purpose. Coal and iron both, and particularly the latter, will be exported in large quantities from these Gulf ports to the eastern ports, as well as to the European ports. I believe that is now pretty thoroughly admitted by all the iron-masters.

By Mr. SHERMAN:

Question. Do any of these streams, the Coosa, the Tombigbee, or the Warrior River, head in the coal fields?

Answer. The Warrior runs through them; the Alabama and Tombigbee do not run through them.

Question. How about the Coosa?

Answer. The Coosa does; and there have been suggestions made frequently, and talked of largely, of connecting the waters of the Coosa and the Alabama River.

Question. From the coal fields of Alabama, by way of the Coosa, or Warrior River, what obstructions are there to water-communication here?

Answer. I am not sufficiently cognizant to give you those points.

Question. I would like a description of the mode of conveying, both by rail and water, this coal and iron to Mobile Bay?

Answer. The Alabama and Chattanooga, or the South and North Road, both empty here, and they pass directly through them. In going along the line of railroad you are running through coal and iron almost the whole distance. It crops out and shows itself to you. The turning of the Coosa into the Alabama River would probably affect that matter, and I suspect that there are gentlemen here who understand the local geography who can give you an explanation of that matter.

By the CHAIRMAN:

Question. Does not the Coosa empty into the Alabama?

Answer. Yes, sir.

Question. How far is it from Cairo to this point by your railroad?

Answer. Four hundred and ninety-six miles.

Question. How far is it from here to Chattanooga by way of your road, and the Alabama and Chattanooga Railroad?

Answer. Four hundred and thirty-five miles.

Question. How many miles from here to Atlanta?

Answer. Three hundred and sixty-four miles.

Question. From here to Vicksburgh by the way of the Vicksburgh, Meridian and your road?

Answer. Two hundred and seventy five miles.

Question. What are the charges on fourth-class freights, or the lowest class freight on your railroads?

Answer. That depends altogether upon which direction you take the freight.

Question. Both ways, if you please?

Answer. I suppose the average rate, or about the average rate of south-bound freight would be about $3\frac{1}{2}$ cents a ton from Cairo here.

Question. What class of freights do you mean by that?

Answer. Our classification is perhaps a little different from others. For instance, corn is made special sometimes.

Question. What is it for corn, wheat, flour, &c.?

Answer. I suppose about $2\frac{1}{2}$ cents per ton per mile.

Question. Do you know what it is on the other roads leading from Chattanooga down?

Answer. There would be very little difference in the rates all through our country. The uniformity of all our southern roads is the want of equalization of tonnage. Of every three cars leaving Mobile, two of them go empty. The consequence is, that has to be levied on the down freight. If the harbor was opened, and in communication with the outside world, that would all be remedied at once.

Question. You have given us now the charges on the south-bound freight, what are the charges north-bound?

Answer. I suppose not over $1\frac{1}{2}$ cents per ton per mile.

Question. On specials, such as wheat, corn, flour, &c., it is about $2\frac{1}{2}$ cents?

Answer. Yes, sir; about that.

Question. On all fourth-class freights, such as coal, ores, &c., what is it?

Answer. We do not bring ores south; coal we do. We have been getting coal from Pittsburgh pretty largely.

Question. What would be fourth-class freight coming southward?

Answer. On coal, about $1\frac{3}{4}$.

Question. Where does your coal come from that you bring over your road now?

Answer. It has been coming exclusively from Pittsburgh down the Ohio and striking us at Cairo, or Columbus, Kentucky.

Question. Do you prorate with the river from the point where you strike it to the place of production of the coal?

Answer. No, sir; it is brought in barges.

Question. And that is the terminus of the barge line?

Answer. Yes, sir; we take the coal from there.

Question. They charge actually about a cent and a half, I understand you?

Answer. Not over that, but we do not take it at all seasons of the year at that. We force them to give it to us in the summer season, when there is nothing else to do; in the winter time we charge more.

Question. Why is it that coal cannot be brought much cheaper from the neighborhood of Birmingham, by way of the Alabama and Chattanooga road and your road, than from Pittsburgh?

Answer. It can, unquestionably, except that nobody has started into the business. Birmingham is about the center of the coal and iron region.

Question. Is there any difference in the quality of the Birmingham coal and the Pittsburgh coal that makes one more desirable than the other?

Answer. There is a great variety of coal in the neighborhood of Birmingham of greater or less value. For grate purposes there is a portion of the coal that we regard as superior to the Pittsburgh coal; another portion for furnace purposes is also so regarded, while there are others which are considerably below the standard of Pittsburgh coal.

Question. Have you stated whether your larger proportion of coal used here comes from Alabama mines?

Answer. Heretofore it has come almost exclusively from the Pittsburgh mines, owing to the fact of the non-development of the other.

Question. Have these roads been long developed, up into the heart of the coal region.

Answer. No, sir. One road has been completed about two years, and it has had certain complications surrounding it.

Question. How long have the South and North Road, and Mobile and Montgomery connection been formed?

Answer. Some twelve or eighteen months, perhaps. It is about twelve months, I think, since they got into the city.

Question. What is the average price of coal here?

Answer. Coal here is very high. I suppose it costs, on an average, nine to ten dollars a ton.

Question. What sort of coal is that?

Answer. A large portion of it is bituminous, and occasionally some anthracite is brought here very cheap from Europe, coming in ballast.

By the CHAIRMAM:

Question. In this city anthracite is quoted at retail, I observe, at "\$11; Pittsburgh, \$11; Alabama, \$11; Virginia cannel, \$15; English cannel,

none in the market." That is from the Merchants' Exchange price-current of this city. Did you say you did not know anything about the obstructions in the Coosa?

Answer. I do not know anything about that.

Question. Nor the other rivers?

Answer. No, sir. The Tombigbee is the only one I know anything about.

Question. What are the passenger rates from Cairo here?

Answer. Pretty generally local passenger-rates are 5 cents a mile.

Question. Are there any fast-freight lines operating in this section of the country?

Answer. Not in this immediate section.

Question. None on your road?

Answer. No, sir.

Question. Nor on the other roads centering here?

Answer. No, sir.

Question. How do roads connecting here manage their through business; for instance, running from Birmingham to your road, and then to Mobile; how would the business be conducted?

Answer. Their cars would come over our road, and it would be simply an account of mileage.

Question. In making up this mileage-account, as between yourselves, how do you estimate the use of a car over your road?

Answer. At a cent and a half a mile.

Question. How do your local freights over your road between here and Cairo compare with the through freights?

Answer. On our immediate line our local is the heaviest. We run through a very fine country. That is not true of all the roads running out of this city. Our local is higher than our through rate.

Question. About how much higher generally?

Answer. The through rate is a very varying rate. We sometimes get it above the local, but as a general thing it is below the local.

Question. About what percentage?

Answer. I should suppose from 25 to 33½ per cent.

Question. Where do you get the iron used on this road?

Answer. We import it generally from Europe. We can ordinarily get the freight of iron pretty cheap to the cotton ports.

Question. Have you ever made any comparisons in your connection with railroads as to the relative cheapness or actual cost of water and rail transportation?

Answer. I suppose the absolute cost is less by water than it can possibly be made by rail, but I have long had a theory that rail-transportation could be very materially decreased by introducing a slow-schedule system. I believe that freight carried at a speed of not more than five miles per hour could be reduced very much indeed, and as much money could be made to the company.

Question. You think five miles would be the maximum of profit then for speed?

Answer. I think if you will put your speed down to about five miles an hour more money could be made than at any other rate.

Question. What is the grade of your road?

Answer. The highest is 40 feet going north and 33 coming south.

Question. What is your north-bound freight here usually?

Answer. We are getting to have some lumber, and naval stores are beginning to spring up somewhat. That interest of course was all destroyed during the war. It is beginning to spring up again, and we are

getting some little business in the way of foreign goods. The coffee trade is springing up and has been pretty large for the last two or three years.

Question. What are your chief articles of transportation southward?

Answer. The leading article of all is cotton.

Question. Coming southward?

Answer. Yes, sir; coming from the interior points.

Question. Do you not bring a considerable quantity of grain from the West?

Answer. Yes, sir; a large amount of grain.

Question. Do you find any difficulty in the storage of grain here on account of the climate?

Answer. Not at all.

Question. How do you store it for distribution here?

Answer. It is stored here in what is equivalent to cotton-sheds, if you are aware what they are. They are tight on the outside and opening into a court.

Question. Do you bring grain in bulk or in bags?

Answer. We have brought very little until this season, when we have begun to bring some in bulk.

Question. When you bring it in bulk do you store it in bins in that way?

Answer. No, sir; they generally sack it upon its arrival.

Question. When it is stored it is stored in sacks?

Answer. Yes, sir.

Question. Have you ever shipped any corn from here abroad?

Answer. I am not aware that there has ever been any corn shipped from here abroad. Some gentlemen now tell me that there has been some small shipments to Cuba.

By Mr. DAVIS:

Question. What does it cost to get it from the cars to the boat; what is the usual charge?

Answer. Nothing, with us, sir.

Question. It must cost something.

Answer. No, sir; we have a track that runs right down to our own wharf. We discharge without a particle of cost, drayage or wharfage.

Question. It has to be handled?

Answer. Yes, sir; but the same slings that handle from one conveyance put it into the other.

Question. That costs something.

Answer. Yes, sir; but no more than it would to unload it ordinarily.

By Mr. SHERMAN:

Question. That is covered by the freight?

Answer. Yes, sir.

Question. You pay that?

Answer. Yes, sir.

By Mr. DAVIS:

Question. What is your usual railroad gauge?

Answer. Five feet. That is almost entirely universal in the South.

By the CHAIRMAN:

Question. What is your competing line for your northern freight? You have competition, I suppose?

Answer. Yes, sir; the Mobile and Montgomery connect with the

South and North at Montgomery. The Mobile and Ohio run virtually in the same direction. The Mobile and Ohio being my own road, they make a competing point with us at Louisville.

Question. Those are owned by entirely different interests, and are in competition?

Answer. Yes, sir.

Question. Do you agree upon prices between yourselves for the transportation of north and south commodities?

Answer. No, sir.

Question. Are you not in competition with the river-lines?

Answer. All the time.

Question. Which do you find the most active and difficult competitor?

Answer. The river-line is the hardest thing to fight. The Mississippi is the hardest thing to fight that was ever struck yet, I reckon.

Question. Do you know the distance from Cairo to this point by the way of the Mississippi River?

Answer. I do not believe I can give it to you.

Question. Is there any considerable amount of northwestern produce brought down the river here?

Answer. Yes, sir; a large amount.

Question. You find that a much more active and dangerous competitor than the other route?

Answer. Yes, sir; in good weather, when the river is up; but when we catch them with low water, or an ice gorge, we turn the tables on them.

By the CHAIRMAN:

Question. (To Mr. MURDOCK.) Corn is now 90 and 95 cents a bushel here. It can be brought down the Mississippi River from Saint Louis for 15 cents a bushel, and evidently across this short road cheaply. Why is it so much higher here than the apparent cost of transportation would seem to indicate?

Answer. I suspect when it is examined it is not found to be so much higher. When you put on all the freight and side charges, you will find the margin is rather a small one.

Examination of Hon. PETER HAMILTON.

Mr. HAMILTON. Mr. Chairman, the inquiry upon which I supposed I might be able to give some reply related to obstructions in the Warrior River. There has been placed in my hands what I understand to be an accurate list of all the obstructions which exist in that river between the town of Demopolis, which is at the mouth of the river, where the Warrior and Bigby unite, to Tuscaloosa. It seems to be an accurate list, numbering altogether sixty-nine, and mentioning even one log. Tuscaloosa is the head of navigation, that is in the heart, or very near what is known as the Tuscaloosa coal-fields. The list reads as follows:

List of obstructions in Warrior River, from Tuscaloosa to Demopolis, given by Bud Bartee.

1. *Gunshoot*, (twenty-five miles below Tuscaloosa).—Little work on east side river; dredging and cutting logs will make it good, year round.

2. *Little-Log Shoals*.—Some logs to cut out, and dredging; one dozen hands four days.

3. *Tupelo Bar*.—Needs dredging and log cut out below mouth Little Sandy, and change channel on east side straight down river.

4. *Cunningham's*.—One tree to be removed.

5. *Little Bar*, (Collier Foster's).—One log to be cut out.

6. *Ball Bar*.—Logs and poles moved; little dredging; four days, dozen men.
7. *Big Sandy*.—Several logs; two or three days' work.
8. *McCowan's Bluff*.—Three logs, little dredging at mouth of creek to miss a rock; four days' work.
9. *Buzzard Bar*.—Logs and Suukin Flat in chute; two weeks' work; half a mile long.
10. *Below Burton's Landing*.—One log to be moved.
11. *Above Williford's*.—Lilly's wreck to be moved, and one log.
12. *Izard's Shoals*.—Stopping channel on west side could have good water.
13. *Burroughs's Rock*.—Two rocks to be blasted, good channel and four feet water year round.
14. *Nike's Bar*.—One log to be taken out.
15. *Battle's Gin*.—Two logs; bar below, two logs.
16. *Cut-off*.—Two logs in bar above cut-off; foot of cut-off two weeks' work; bushes, small and large trees.
17. *White's Bar*.—Four or five trees to be moved.
18. *Cleveland Shoals*.—Six logs to be moved; one week's work.
19. *Bohanan's*.—Logs all round bend; two days' work.
20. *Alligator Bar*.—One day's work upper, four days' work lower part.
21. *Wilson's Bluff*.—Four days' work removing logs—ten or twelve.
22. *Parham's Gin*.—Dredge under point to avoid rocks in bend; two days.
23. *Little bar below*.—Two days' dredging.
24. *Mary's Wreck*.—Eight or ten logs to be moved.
25. *Rock Island*.—Dredged at head of point; one or two days' work.
26. *Wild Man's Island*.—Two logs.
27. *Bar below Collins's*.—Head of chute dredged, channel to east side, plenty of water, six logs to Log Shoals.
28. *Jones's Field*.—Four logs to be moved.
29. *Logan's Bluff*.—One log to be moved.
30. *Log Shoals*.—By opening channel west side, good water year round.
31. *Hickman's Bar*.—Remove obstructions on point, cut channel 60 yards, good water year round; five or six logs to be moved down to Z. Logan's landing.
32. *Meriweather's Landing*.—One log.
33. *Meriweather's Bar*.—Dam and turn channel west side; two weeks' work.
34. *Lumber's Bar*.—Four logs; two days.
35. *Minter's Creek*.—Two logs; one day.
36. *Finch's Ferry*.—Wreck of flat-boat.
37. *Big Creek*.—Logs; one day.
38. *Standing Cypress*.—One log, and six logs thence to Eutaw Landing.
39. *Jumping's Ferry*.—Four or five logs.
40. *Pickens's Bar*.—Two logs to Choctaw Bluff.
41. *Choctaw Bluff*.—Three logs will put chute across river and better.
42. *Stephens's Bluff*.—Dredging and four or five logs put channel on east side.
43. *Duck Bar*.—Big log.
44. *East Port*, (reach above).—Four or five logs.
45. *McIlpen's Ferry*.—Timbers out east side; channel in old place.
46. *Moore's Landing*.—One log; thence to Dolapich three or four logs, and Erie Island four or five logs.
47. *Erie Island*.—Four or five days' cutting logs; Bar Split Dip three or four logs.
48. *Bar below Erie*.—Two days' work; thence Buckman's three or four logs.
49. *Buckman's Island*.—Light dredging 50 yards.
50. *Limestone Creek*.—Ten or twelve logs above.
51. *Below Limestone Creek*.—Six logs.
52. *Myers's Bluff*.—Two logs.
53. *Dolcroft's*.—Two logs.
54. *Q. E. Clements's*.—Two or three logs thence to Lake Bond.
55. *McIntyre's Shoals*.—Six days' dredging and cutting logs.
56. *Prairie Creek Shoals*.—Ten days' work moving logs; thence to Arcola fifteen logs.
57. *Yellow Creek Shoals*.—Three or four logs; to Devil's Bridge thirty or forty logs and some dredging; at Taylor & Tatom's three or four logs.
58. *From Tatom's to Wright's*.—Four trees.
59. *Wright's to Glover's Ferry*.—Eight trees.
60. *Glover's to Demopolis*.—Ten trees.

Respectfully submitted.

JOHN S. KENNEDY.

TUSCALOOSA, August 8, 1873.

This list was obtained last summer with a view of having a survey made of that river, in order to its being opened to permanent naviga-

tion for purposes of the coal trade. A committee was appointed by the board of trade last summer to make some inquiry, and, upon inquiry, they obtained this information. As I say, there are seventy or eighty obstructions mentioned, even down to a single log that is embedded in the stream.

By the CHAIRMAN :

Question. Do you know anything about the navigation of the Coosa River ?

Answer. Only in the most general way.

Question. Have there ever been any surveys by your State or by the General Government of those rivers ?

Answer. With regard to that I will state that almost the last thing I did before leaving Montgomery, on public matters, was in relation to a company which has been formed to open the navigation of the Coosa River from Wetumpka to Rome, Ga. At the last session of the legislature a memorial was sent to Congress in relation to the Coosa River. There is a company formed in Alabama under a charter that was obtained a number of years ago. They have formed themselves into a company for the purpose of opening the Warrior River in the neighborhood of Tuscaloosa, some distance above and some distance below, by means of slack-water. They propose to construct a slack-water navigation, so that they can load barges with coal from the bank of the river and have them towed down to the Gulf and to Mobile. At the head of that company, or connected with it, are some Ohio capitalists, with whom I was in communication last summer. As I understand, the coal-fields which they own lie seven and a half miles to the west of the bank of the river, and about eight or ten miles north, or above the town of Tuscaloosa. Tuscaloosa is at the head of navigation upon the river. That navigation, as already stated, lasts only from four to six months in the year. As I understand, the Tuscaloosa coal possesses some advantages over all other coals found in Alabama, and it is supposed to be for some purposes more valuable than any Wales coal, even for steam-navigation, I think. This company is formed with a view of opening those mines, and bringing that coal to market. They require, as they informed me, to construct a short distance of railroad from these mines to the river; then, to insure the constant and easy transportation of the coal from that point to tide-water, they need the construction of a slack-water navigation for some distance on that river.

In addition to that, there is another company which has formed, with a view of connecting that country by a cross-railroad with the North and South Road, Birmingham, in order to bring the coal down by rail to Mobile. But in my judgment, as has been suggested, transportation by water is vastly more valuable than any artificial communication that can be formed by rail.

By Mr. SHERMAN :

Question. What is the distance from Tuscaloosa to Mobile ?

Answer. I cannot tell.

Mr. STEWART. It is between four hundred and fifty and five hundred miles, by river.

The WITNESS. These rivers, the Coosa, the Warrior, and a little stream emptying into the Alabama, all pass through exceedingly rich mineral deposits in this State, one known as the Cahawha coal-fields, the other the Tuscaloosa, and the other the Coosa. These streams pass directly through nearly the center of each of those large coal-fields, and very close to the fields are found these iron-mines.

By Mr. SHERMAN:

Question. The Pittsburgh coal that you consume here floats down the Ohio River a thousand miles before it gets to Cairo?

Answer. Yes, sir. Allow me to state one difficulty that we labor under in this State, and I think it is an explanation of a large amount of our difficulties, and to the apparent want of enterprise in this State. It is very certain that these large enterprises can never be carried on without large capital, and it is very certain that the best mode of using capital for this purpose is by means of associations or corporations. It so happens that, by the constitution of this State, it is impossible to make a corporation free of individual liability. I think that that lies at the very root of the backwardness in which we find ourselves with regard to these enterprises. It is, in my judgment, an exceedingly unwise provision of the constitution, but, nevertheless, it is a part of our fundamental rule. I merely make that remark as, in my judgment, a matter which explains a great deal of our backwardness.

Examination of Hon. GEORGE N. STEWART.

Mr. STEWART. Mr. Chairman, I am designated to address you upon two subjects, the opening of the connection between the Coosa and the Tennessee, and I confess as to that matter, I do not know much. I have been recently attached to that committee and am not well informed of details. I will merely remark that it is a part of the programme of Professor Maury, in his water communications that should be opened. Steamboat navigation from here to the falls of the Coosa above Montgomery is very good. There are fifty or sixty miles of shoals, and above that two hundred miles of steamboat navigation again. There was a great overflow in the Tennessee some years ago, and the water covered Chattanooga. If it had risen 20 feet more, that would have poured the water of the Tennessee into the Coosa. The only question about opening that navigation is this: Is there water located high enough to feed the canals to make a profitable connection? We have received boats here from West Virginia. They came down the Tennessee, and they were hauled across a short portage into the waters of the Coosa, and came down here in high water; but there have been surveys of the Coosa which are published and which you can be furnished with.

On the subject of coal and iron, I have been appointed chairman of the committee on mines and minerals, and I have given that subject some attention. The wealth of Alabama in coal and iron is beyond calculation. We can supply iron and coal to the whole world. It has been entirely unknown for many years, although known to be. I live in Tuscaloosa, at the foot of the coal region, and I know what the quality of the iron there is to some extent, but it was not known thoroughly and the reason was there was no access to the coal region. Attention has been drawn to it only since the railroads have pierced the coal region, and persons have been able to see it. Accounts were given to some northern gentlemen of the coal and iron, and they would not believe a word of it until they came to see, and then they found that the facts exceeded their expectations.

I have taken the pains to examine the iron regions of other States. I have been on Lake Superior where the iron-ore is got out, carried by railroad to Lake Superior, to Grand Bay, and shipped to Pittsburgh. At Pittsburgh, when I was there, it sold at \$15 a ton. I have been to the Iron Mountain of Missouri. The ore is carried to Carondelet at Saint Louis, shipped on steamers, and carried to Pittsburgh, where it

is mixed with the Pennsylvania iron. I do not know what the price is now.

I was at Louisville on the opening of the South and North Railroad last fall. The quotation then was, at Cleveland, \$13 a ton for the iron-ore of Lake Superior. We have iron-ore and the best quality of iron known. We have a better iron than the best Scotch pig, and it is the highest iron in the market, rating at Saint Louis last fall \$62 a ton. We have the black-band iron, which is the best iron known. This iron-vein is the same which is found in Pennsylvania and New York, in the Alleghany ridge, but it outcrops in Alabama. It is deep in the earth in the Alleghanies farther north. We have what is called the Iron Mountain, one hundred and odd miles long, which is full of iron, from 15 to 50 feet thick, and they say in some places 150 feet.

By Mr. WEST :

Question. What did you say your iron was worth in Saint Louis?

Answer. In Louisville it was quoted at \$63 a ton at that time; that is, the Alabama pig-iron. It was the highest quotation in the market. We never saw a pig of iron made here. It is all carried to Louisville, or Pittsburgh, New York, or Philadelphia, by rail. I made a report some time ago upon the subject, and I reported to this board that all we had to do was to provide for transportation, and if we did so the mineral resources of Alabama would take care of themselves; and that is the fact. I have no other idea but that. It is attracting now the attention of capitalists from England. They have come to examine. They will not believe the reports until they are confirmed and reconfirmed.

Birmingham is in a beautiful valley. It extends northeast and southwest, and it has a valley-route from Chattanooga to Mobile. There is not a hill or tunnel to cross from here to Chattanooga, and it goes through the mineral region. On both sides you have coal and iron. At Birmingham the basis is limestone. It has a level bed, and this ridge or Red Mountain, on the eastern boundary of the town, 500 feet high, is in sight. About half way up you come across the iron-bed. All you have to do is to blast it, throw it into the valley, and knock it to pieces. As I told you, the iron-ore of Missouri and of Michigan sold in Pittsburgh at \$15 a ton. It takes two tons of ore to make one of iron. We get the ore here from fifty-cents to a dollar and a half a ton.

By Mr. WEST :

Question. Getting it out of the mine directly?

Answer. You burst it off; you do not mine, you quarry it.

By the CHAIRMAN :

Question. What is the percentage of iron?

Answer. Yield is about 50 per cent.

A BYSTANDER. It will average from 60 to 65.

The WITNESS. Practically it yields 50 per cent.; it contains more; the quality is superior, and the quantity is as much as you want.

Now, as to the transportation. I have known for a long time the through route was the Grand Trunk Road from Mobile to the iron region. That route is the direct route; it is the valley route. It has no grades of any consequence; the grades are trifling. That route has been commenced and built from here to the Tombigbee Road, about eighty miles. The distance would be about two hundred and twenty-five miles to the coal and iron region. Furnaces are building there. They are increasing, but, as I mentioned to you, it is of late,

because there has been heretofore no connection. The North and South Road was opened last year. From Birmingham north you cross the mountain region; but from Birmingham here, it is a valley region. There is no grade equal to 30 feet on the mile from Birmingham here. It is a level route. That is the route by which the minerals and coal, so far as railroads are concerned, must come. A company have bought a large quantity of coal-land in Walker County, and they pointed out ten miles square as the best coal region in the world. They propose to open the navigation of the Black Warrior River. There are two obstructions at Tuscaloosa of 24 feet, and above that a fall of 50 feet. They propose to put locks there to pass the boats. From Tuscaloosa to Mobile the obstructions are merely sand-bars. There is only one rock-obstruction on the Tombigbee, a hundred and twenty-five miles above here, which is soft rock, and can be cut through easily.

The coal we now get is from Pittsburgh. It goes down the Mississippi River, and is gotten by the New Orleans Railroad. I paid the other day \$12 a ton for it; but we were offered it at \$6.50 through Montgomery. However, the Grand Trunk will bring it here much lower. A gentleman said to me: If I can find a coal-market, we can give you some millions of tons of coal a year, and can do it at \$4.50. We could give it at \$4, but expect \$4.50. That, however, has not been done; it lies there yet. The coal-formation of Alabama is in the center of the State—of about eleven hundred square miles. The formation is at the town of Birmingham, at the Iron Mountain—a ridge full of iron. It is the apex of the convulsion which brought the coal to the surface. On the eastern side it dips about 45° , so that you very soon come to a depth, and possibly may come to water. On the western side the dip is only 10° , so that you can get a supply for ages without going deep. It is said that the Warrior coal is the best. Anthracite coal we find in the northeastern portion of the country, and there is none elsewhere; it is a small region, but it furnishes that. The Alleghany Ridge brings the coal all along from New York, and dies out in Northern and Middle Alabama. There are two coal-regions which run through the Alleghany Mountains. The upper strata is, I suppose, 400 or 500 feet above the lower strata. The upper strata expires before it reaches us. We have the lower strata, which crops out when it comes at the dying-out of the Alleghany Mountains in Alabama. We have the same continuous vein as they have at Pittsburgh. At Pittsburgh they excavate deep to find that vein. Here we have it cropping out at the surface, but it is exactly the same. It is the same coal—sometimes an inch thick, sometimes 5 or 10 feet. The thickest veins are not the best; the medium are the best. In the thick veins they do not use all. I was offered at Birmingham to put coal on the cars at \$1.50 a ton. I was authorized to make such a contract when it could be found. That is, on the North and South Road. Those roads cannot supply us with coal here. The route is circuitous. From the Montgomery here, there is too big a rise to go over, and that prevents the coal from going to Pensacola, and it cannot compete with Mobile. Mobile is the outlet on account of the grades, and in coal the grade is everything.

We now want the finishing of the Grand Trunk Road, because that is the road, so far as railroads are concerned, to bring the coal and iron here. The opening of the Warrior would be the *desideratum*, because it could be carried cheaper, and it is perfectly practicable. There can be a slack-water navigation made on it. Its source is 1,000 feet above tide-water. When you travel from here, you have a level country until

you get at the Tuscaloosa region, and there you find the falls of the river. Coal can be had in many places immediately on the railroad. They are getting it out now.

Now there is another trouble; Mr. Montgomery said he was expending a large amount of capital, and expected to open slack-water navigation. Can we find a market in Mobile for coal? I say the market depends on the supply, and the supply on the market. Beyond a doubt we have the best harbor on the Gulf of Mexico, and that time will prove. Now, if you can supply coal here in large quantities ships will come here and get it in large quantities. We must make the appliances so that it can be shipped easily. This will be a great coal-market for the southern coal. It is the nearest coal to the sea, and Mobile is the nearest point to the coal region, and you will find that the valley route, formed by the rivers which flow here, gives a route where we have not the grades, and the transportation by rail will be the cheapest. If you attempt to go from the valley in which Birmingham is situated to Savannah or Charleston you have to cross over the ridge between the rivers. You cannot carry coal that way. We want two things; we want the supply of coal here to give the market, and we want the market to give the supply of coal. The facility of transportation is the great thing. The Grand Trunk Road must be completed. It is a road in the hands of gentlemen here who have started it to the extent of their means, but the difficulty is that it has been prevented from being completed. That is the route so far as rail-construction is concerned; but then the opening of our rivers of course will give us further access to this coal region. We want to make this harbor the great depot for coal on the Gulf of Mexico, and to supply the whole Gulf. The Gulf of Mexico is a sea of short navigation, and that kind of navigation must always be by steam. Long voyages would make it different, but for short voyages steam is necessary. It is evident that this must be the coal depot. It is the nearest, and we have the supply.

Now as to Mobile Harbor. We may not be able to impress you with the ideas we have, but we tell you it is the great harbor of the Gulf. There is water enough for vessels of the largest class to ship six thousand bales of cotton on. There is a difficulty now, because the vessel cannot come to the wharf, but that is not a real difficulty. You can load a ship a great deal cheaper in the bay than you can at the wharf in New Orleans. It costs a couple of thousand dollars less to load or unload a ship here than it does in New Orleans. Mobile Bay is perfectly safe. There never has been a vessel lost there by storms; the anchorage is perfectly safe—it is land-locked; but the great reason is, that the hurricanes do not strike Mobile Bay.

By Mr. WEST:

Question. You say that you can load a ship cheaper in Mobile Bay than you can in New Orleans?

Answer. Yes, sir.

Question. A steamship?

Answer. Yes, sir; any kind of a ship, I do not care what. Now as to the difference in the price of freight. Freight is cheaper, perhaps, from New Orleans than Mobile Bay; but what is the reason? In New Orleans they put lead in the bottom of the ship, and beef on top, and cotton on top, and the ship carries more tons of freight. When we have western produce to ship here, the freight will be cheaper here than there.

Question. Can you load a steamship by lighter in Mobile Bay cheaper than a steamship can be loaded at the wharf in New Orleans?

Answer. Yes, sir.

Question. For what reason?

Answer. When we built the Mobile and Ohio Railroad we sent for the most accomplished engineer in the United States, telling our agents not to mind the price, but to get the ablest engineer they could find. That was Mr. Childs, of Massachusetts. When he left us he said, "I leave you, but I want to make a prediction to you; the day will come when the freight of New Orleans will all be shipped in Mobile Bay." He says: "I admit engineering can accomplish almost anything, but there is one trouble that New Orleans has beside the mouth of the Mississippi. It has a hundred miles of heavy current up the river, requiring an extensive steam-power to tow all ships, and that nothing can overcome. You, with a railroad which is upon a dead level from New Orleans into Mobile Bay, can carry a bale of cotton for so much less that you will beat New Orleans. One train can carry a ship-load."

Question. Then your engineer's prophecy, as I understand, was that, in consequence of a sailing-ship being compelled to be towed to New Orleans, Mobile would absorb the commerce of New Orleans?

Answer. Yes, sir.

Question. Did he make any prediction upon the fact that we might have steamships that would go up the river without towage.

Answer. They are very expensive. The current is there all the same. Now Mr. Brewer and myself went to the western country to propose an opening between the Mississippi and Mobile Bay. We were received with great favor at St. Louis, Cincinnati, Louisville, and other places. They wanted a harbor on the Gulf and thought that Mobile Bay was the point. Now New Orleans was of course opposed to opening the Mouth-shack, but we had a right to have it opened. Now they propose the opening of the canal at Saint Philip. One thing perhaps you will find when you get to New Orleans, that the improvements at the mouth of the Balize cannot be effectual, because there is a singular thing which nobody can account for. A ship will anchor at 16 or 18 feet of water, and in two weeks there will be 12 feet of water there. And why is that? The earth rises from below and makes a mound. You break into that and you will find dry dust.

Now I will give an example of the cost of the towage. The ship Regent went to get a cargo. She did not get it and came here. We had the account to collect. It was \$2,990 towage up and down, and it was a 1,200-ton ship. The opening of the canal Saint Philip does not meet the favor of the engineers, because they see the difficulties. It will fill with mud; a bar will form at the mouth of it as at the Balize, and if you let the water run through it will make a bar at the mouth of it so that there is a difficulty there which will not work.

Question. You say the engineers have reported against the Fort Saint Philip canal?

Answer. They do not favor the plan much, so far as I can learn. But anyhow, it will not get clear of the towage. I do not expect to convince you of that fact, but I can see it, and that the predictions will come true in point of time. The fact that Mobile is safe from hurricanes will make it the great point of shipment. Then we add to that the supply of coal which must be here.

Now we want an improvement in the bay to put the coal into the ships, and we want an act of Congress to authorize us to build a pier there and to construct a railroad into the bay. We expect by and by

to supply the wants of the Gulf with coal. And I say that whenever we get our means of communication completed, the opening of the rivers and the completion of the Grand Trunk Road, that the mines and the coal will take care of themselves. You can raise cotton everywhere, but you cannot get coal and iron everywhere, and you are obliged to go to their location, where they exist.

There is a company of miners, principally Welshmen, who have come to Tuscaloosa to open a coal-mine near there. That is at the fall of the Warrior and foot of the coal region. The mineral region expires there. If you dig under Tuscaloosa you will find coal. This company has come there to mine coal and send it to Mobile. They are Welshmen, accustomed to the business, but the disturbances of money-matters have caused them to cease at present.

By Mr. DAVIS:

Question. You spoke of the iron-ore. Is there a railroad now to that?

Answer. Yes, sir, two roads to it; one by the Mobile and Ohio and the Chattanooga, going through Birmingham, and the other by Montgomery and the North and South.

Question. How many miles?

Answer. Two hundred and twenty-five miles, I should think, from here.

Question. How far is it from that to the nearest point on the Ohio River, by rail?

Answer. I cannot tell you that, but there is a tremendous grade of 90 feet to the mile in Tennessee.

Mr. MURDOCK. It is about three hundred and fifty miles from Birmingham.

Mr. DAVIS. What is the freight per ton per mile from Birmingham to Louisville?

The WITNESS. I do not know.

Question. What is the price per ton for mining coal in that neighborhood?

Answer. I suppose it costs about half a dollar a ton to mine it. A man makes about six or seven tons a day.

Question. I suppose there is a rate per ton for mining, is there not?

Answer. I was told that it cost about a half a dollar a ton. At Birmingham I was authorized to contract, by a gentleman there, to put coal on the cars on the road at a dollar and a half a ton.

Question. What are the thicknesses of the veins now being worked?

Answer. There are various veins and different thicknesses. I suppose they are generally about two or three, or from 3 to 5 feet, and may be 6 feet. Generally, I would say about 3 feet; but the coal region is very little known.

By the CHAIRMAN:

Question. What kind of labor is employed there; negroes or white?

Answer. Generally white.

Question. Miners from abroad?

Answer. I think so, generally.

By Mr. DAVIS:

Question. (To Mr. Murdock.) Can you give us the thickness of these coal-veins?

Answer. I only know of one that is 8 feet. I am not much conversant with them.

Question. Can you tell us how many veins there are above water-level and their thickness?

Answer. No, sir; I cannot.

A BYSTANDER. I think five or seven layers have been explored.

Examination of FRANCIS B. CLARK, president of the Grand Trunk Railroad Company.

Mr. CLARK. Mr. Chairman, the subject which was specially referred to me was in relation to the coal and iron question. Mr. Stewart has gone over so much of the ground that there is very little left for me to say. The particular idea was to call attention to the value and advantages of Mobile as a coaling depot for the Gulf, and I have merely collated a little information with regard to the lines of communication between the coal regions and the Gulf. The coal-fields of Alabama measure, according to Professor Forney, fifty-five hundred square miles. They are accessible now, first, by the Mobile and Montgomery and the South and North Alabama railroads, from the Cahawba coal-field, a distance of two hundred and sixty-five miles from the mine to Mobile, and by the same route to Pensacola, it is two hundred and forty-five miles, over a grade of 65 feet to the mile to Mobile and Pensacola, the Cahawba coal-fields by the only line of communication now existing. On this grade the capacity of a twenty-seven-ton engine would reach a load of a hundred and forty-seven tons of coal; say fifteen cars.

The second connection would be by the Alabama and Chattanooga, and the Mobile and Ohio roads from the Warrior fields, a distance to Mobile of two hundred and thirty-five miles, encountering a grade of 66 feet to the mile, equal to fourteen car-loads of coal, with an engine of the same weight. The third would be by the Warrior River when slack-water, now contemplated, shall be accomplished. There are difficulties in the way of that slack-water navigation which have not been mentioned, and that is, that by the storms which prevail sometimes during the winter the river will rise 50 feet in twenty-four hours. The rise and fall is very rapid, and that would interfere during certain seasons of the year with that kind of navigation. The fourth connection is one that is not yet completed. It is by the Grand Trunk Road.

By Mr. DAVIS:

Question. State the miles by your slack-water navigation.

Answer. It would be, of course, the length of the river, which I think is about five hundred miles. The fourth mode of communication would be by the Grand Trunk Road, which is now completed fifty-nine miles in the direction of the Cahawba coal-fields. By this road these fields will be reached at a distance from Mobile of a hundred and ninety miles. They strike the coal-fields at the south outcropping-point, nearest the Gulf, and make the most direct and short line. They reach the coal-mines at a grade of only 29 feet to the mile. With that road completed, that coal can be brought to Mobile in any quantity at the minimum cost; that is, inside of five dollars a ton, including the cost of mining and placing on the cars. And, as Mr. Stewart said, it can be loaded on the cars from the mines alongside of the road and above them without cost of handling, and can be dumped from the cars into the hold of a vessel in the same manner.

Question. When you speak of grade, it is against the coal?

Answer. Yes, sir; 29 feet.

Question. When you speak of a twenty-seven ton engine, do you mean an engine filled with coal and water, or an engine alone.

Answer. It is merely a unit of measure. That would be for a light engine. Engines as high as thirty-five and forty tons are used, but they are too heavy for profitable use upon southern railroads.

I have here a report of the State geologist of Alabama, made to the Grand Trunk Railroad Company, in which he touches upon some matters which are of interest perhaps to your committee. He says, "In a distance of thirty-five miles south of Birmingham, your railroad along its course is nowhere distant from iron and coal more than two miles, and runs for more than half the distance literally through coal and iron deposits, and having at different points near its course abundance of limestone and fire clay, being the other elements necessary for building furnaces and smelting iron." He also says, "The development of this district is proceeding at a rapid rate; three blast-furnaces and a rolling-mill are in operation, and six companies, one English, have made extensive purchases in iron and coal lands within two or three miles of your road, with the intention of immediate working. Capitalists in the iron and coal business are daily exploring this section, and their testimony is united and emphatic as to the immense value of these mineral deposits. Mr. Evans, an English gentleman, representing a company from the Cleveland iron district in England, whom I met during my survey, informed me he had visited all the coal districts in the United States, Canada, Nova Scotia, England, and Wales, but there was nothing to compare with these mineral deposits. He invested largely in the immediate proximity of your road, and informed me that they intended immediately to work them." He also says: "Six distinct seams of coal have been already discovered, all of which I have examined, ranging in thickness at the outcrop from 3 to 6 feet 6 inches. The coal is seen in the banks of the Cahawba River, and also the creeks and branches, and wherever a well has been dug the coal makes its appearance. It is a bright, bituminous coal, lying at an angle of from twenty-five to thirty-five degrees." He further says: "A glance at the coast-line of the United States, and also of the geological map of the North American continent, will at once show that the Cahawba coal-fields are the nearest to all the South Atlantic ports of the United States, especially to the Gulf of Mexico, the West Indies, &c., through Mobile, the southern terminus. If your railroad, as I have stated, is shorter by fifty miles to the seaboard, it can have no equal competitor in carrying coal to the Gulf."

By Mr. DAVIS:

Question. (To Mr. Murdock.) Since I have left Richmond I notice that you burn wood instead of coal, which we use exclusively. Please state the reasons why, and the relative expense of each.

Answer. So far as most roads in this country are concerned, wood is cheaper than coal. Take, for instance, the Mobile and Ohio and the Mobile and Montgomery roads, and there is no coal along the line. If the Alabama coal-fields were developed, and some of the roads running up into coal-fields in the north of the State could bring us coal, then we could strike the coals up above, and also at Florence. We might make a coal depot to run the whole length of the line, but at the present time there is not a pound of coal on the whole length of our line, while, on the contrary, wood is very plenty with us.

Question. What is the usual price per cord by the side of your road?

Answer. From one dollar and seventy-five cents to three dollars and twenty-five cents. In Tennessee and Kentucky wood is expensive to us. In Alabama and a portion of Mississippi wood is very cheap.

Question. Do you keep a record of the cost of running an engine per mile?

Answer. Yes, sir.

Question. Do you know the difference between the cost of coal and wood?

Answer. Not having used coal, I am not prepared to say.

The committee here adjourned.

NEW ORLEANS, LA., December 27, 1873.

Committee met pursuant to adjournment.

Report of the committee of the Chamber of Commerce of New Orleans to the Senate Transportation Committee, 1873.

To the Hon. W. WINDOM,

Chairman Committee of United States Senate on Transportation :

The undersigned committee of the Chamber of Commerce of New Orleans, charged with the duty of laying before your honorable committee the commercial needs of this port, and furnishing the necessary data for Congress to determine whether the money of the Government would be well bestowed in making the improvements desired, beg leave to submit the following report :

In reviewing the circular of questions addressed to us in connection with the Mississippi route, this committee find some to have been sufficiently answered by the report of the Saint Louis committee, and, to avoid needless repetition, they adopt the same, hereto appended and marked A, so far as it is applicable to the interrogatories specially propounded to the New Orleans Chamber of Commerce.

The chief impediment to the development of our commerce has always been the bars at the mouths of the Mississippi River.

The United States Government has for years endeavored to remove this by dredging.

The experiments have been of great value, but the relief afforded has been temporary and inadequate to the wants of commerce, and insignificant when considered in the light of the vast interests involved.

Our chamber, after many years of patient investigation, aided by the best engineering skill at our command, are fully convinced that the Fort Saint Philip Canal will afford economical and permanent relief.

For full particulars of this enterprise, they refer to and make part of this report pamphlet marked B, entitled "Address to Chambers of Commerce, Boards of Trade, and to Congress, as to Fort Saint Philip Canal," and the official report of Major Howell, now in the hands of the proper Department at Washington, also appended hereto, marked C.

ALLEGED-CLIMATIC DISADVANTAGES OF THE MISSISSIPPI ROUTE FOR CEREALS.

After all difficulties arising from shoal water over the bars are removed, your committee has been informed that serious climatic difficulties are alleged to exist. The frequent repetition of this charge in quarters where there was little interest or opportunity to make denial, has given it a seriousness wholly undeserved. We emphatically deny the fact, and assert that no evidence has been adduced to entitle it to serious consideration. Nevertheless, we have been at pains to meet the charge as if made upon full information.

As prefatory to facts and statistics, we beg to call your attention to the fact that Indian corn, the product which is most extensively produced in the Mississippi Valley, and stands most in need of a free passage to sea, is grown in all latitudes on this continent, and to a greater extent in the extreme South than in the extreme North; that it is kept on southern plantations, both that raised here and that imported, from one fall to another, just as it is on northern and western farms, without damage. If, as is not denied, corn can be and is kept without damage from climate in this latitude when at rest, why is it subjected to climatic risks when placed on shipboard at New Orleans and cleared for European ports?

That corn is ruined by transportation over fresh-water streams is not contended. The temperature of the Mississippi waters flowing below the mouth of the Ohio is lower than that of the atmosphere in the same latitude. There can, consequently, be nothing damaging in the thermal state of the Mississippi current.

Not only do the cotton and sugar planters from Memphis to the Balize buy corn grown in the West, but the city of New Orleans purchases, for use here and in the vicinity, 4,000,000 bushels western corn annually. According to the census of 1870, the corn produced that year in the following States was—

	Bushels.		Bushels.
Missouri	66,034,075	Tennessee	41,343,614
Arkansas	13,382,145	Mississippi	15,637,311
Illinois	120,921,305	Louisiana	7,891,628
Indiana	51,004,535		
Ohio	67,501,144	Total	433,816,863
Kentucky	50,101,106		

To these might be added the production of States between the same parallels of latitude, and the corn product of Texas, from which it will be seen that within the parallels included between Saint Louis and Key West, Fla., there is annually grown about seven hundred millions of *Indian corn*.

Conceding its delivery at New Orleans in good order, what more has a shipment of corn to apprehend? It must double the capes of Florida, and go by the ocean to Europe, pursuing the same route over which western produce finds its way to the Eastern States. It traverses the same seas as western produce shipped from the eastern cities does, in reaching Cuba and all points south of it.

In addition to the facts furnished you at St. Louis, we append and make part of this report Exhibit C giving character of obstructions at the mouth of the Mississippi, the tonnage of ships now engaged in the trade, and costs and charges, with comparisons with other cities. To show how grain shipment from New Orleans, for the five years from 1868-9 to 1872-3, inclusive, we append Exhibit D.

In connection with that part of Exhibit D which shows that the expense of shipping bulk-grain by sea is lessened by an increase in the size of ships, we append Exhibit E, showing the depth of the channel at the mouth of the Mississippi from July 1, 1871, to July 1, 1873; also statement of grounded vessels, draught, time of detention, and cause.

To show number of steamships arriving and departing from New Orleans from April 1, 1873, to November 10, 1873, we append Exhibit F, and also a statement of the collector of the port, showing the entrances and clearances from 1870 to 1873, inclusive, marked Exhibit G.

To show our scant railroad facilities and the absence of prejudice in our community among railroads to increased water facilities, we append Exhibit H, prepared by J. T. Tucker, agent of the Illinois Central Railroad.

Exhibit I, appended, shows the extent of our interest in the tobacco trade.

Exhibit J, flour trade.

Exhibit K shows the amount of sail and steam tonnage, foreign and American, plying to and from the port of New Orleans since 1864 to this date.

Exhibit L gives all details of the detention for forty-three days on the bar, its effect on the cargo, cost of getting off, and damage to ship Memphis.

Exhibit M is a brief summary by Major Howell, the engineer in charge of the work at the mouth of the river, of the character of the difficulties to be overcome, the temporary nature of dredging, the permanent character of the canal, its probable cost, feasibility, and economy.

Exhibit N gives the actual expenses from Saint Louis to New Orleans, of one thousand two hundred and fifty miles, of towboat Future City, 1,500 tons capacity.

Exhibit O gives estimate of expenses of steamer John F. Tolle, 1,650 tons burden, costing \$65,000, between Saint Louis and New Orleans.

In conclusion, your committee respectfully submit that the vast interests of so large a part of the population of the United States, residing on the banks of the Mississippi River and its tributaries, makes the work at the mouth of the river a peculiarly national work. In the absence of constitutional objections, your committee have confined their investigations to showing the magnitude of the interests involved, the inadequacy of the present outlet to sea, the feasibility, economy, and permanency of the Fort Saint Philip Canal, and its probable effect, when built, upon the commercial and agricultural welfare of the whole valley.

JOHN H. KENNARD.
A. K. MILLER.
L. J. HIGBY.
CHAS. E. SLAYBACK.
J. T. BURDEAU.
DAVID HADDEN.
R. S. HOWARD.
J. T. TUCKER.
WM. G. COYLE.
WM. M. BURWELL.
SILAS WEEKS.

EXHIBIT A.

[Extract from the Saint Louis Report.]

IMPORTANCE OF THE FORT ST. PHILIP CANAL.

It is urged by those opposed to the Mississippi River and Gulf route, that there is no need for the construction of the Fort St. Philip Canal, the depth of water on the bar being sufficient for the class of vessels needed for the commerce of New Orleans. We protest against this idea upon the ground that New Orleans is a seaport, and all seaports should have such a depth of water guaranteed to them as will admit of the approach of any of the commercial vessels of the world. Railways require to be of uniform gauge to be useful, and seaports should have channels of approach of something near a uniform depth. This requires a depth of not less than twenty-eight feet, and no system of dredging can assure that depth upon the bar at the mouths of the Mississippi during all seasons of the year. Therefore the Government should construct the Fort St. Philip Canal; and it is the opinion of your committee that by use of the improved methods for excavation, this canal may be built at a cost not exceeding \$6,000,000, and if performed by contract—let to the lowest responsible bidder—it may not cost that sum.

CORN STATEMENT.

We beg leave to present the following list of cargoes of corn that have been exported via the Gulf to England during the present season, every one of which has arrived sound, and has sold for the top figures of the market:

Date.	Name of vessel.	Cargo.
1873.		<i>Bush.</i>
February 11.....	Steamship Cheviot.....	15,000
February 13.....	Steamship Louisiana.....	19,000
March 3.....	Steamship Mississippi.....	12,000
March 31.....	Steamship St. Louis.....	26,000
April 3.....	Brig George Gilchrist.....	15,000
April 8.....	Brig Royal Haven.....	22,000
April 11.....	Steamship Minnesota.....	18,000
April 23.....	Steamship Memphis.....	50,000
April 23.....	Brig Pekin.....	24,000
May 9.....	Steamship Alabama.....	29,000
May 17.....	Steamship Louisiana.....	25,000
June 6.....	Steamship St. Louis.....	16,000
June 19.....	Steamship Mississippi.....	19,000
June 30.....	Steamship Concordia.....	19,000
July 2.....	Steamship Minnesota.....	35,000
August 8.....	Steamship Oberon.....	26,000
August 26.....	Steamship St. Louis.....	22,000

Accounts of sales of each of the above cargoes have been received by mail, with the exception of the last one, and the condition of the corn on arrival at its destination has been just as good as any that has been shipped from New York, or from any other point of the world to Liverpool.

The steamer Memphis lay on the bar and in the river forty-three days, and returned to New Orleans and discharged cargo, repaired, and retook cargo, which arrived in good condition.

Q. 6. What are the rates of insurance on grain by the river and Gulf route?

A. Respecting the rate of insurance on grain by the river and Gulf route, we would state that from Saint Louis to New Orleans the rate by boat and barges is 1 per cent. From Saint Louis to Liverpool, *via* the Gulf, it is $3\frac{1}{2}$ ¢. From Saint Louis to New York, *via* the Gulf, it is $2\frac{1}{2}$ ¢. In reference to these rates, let us observe that the rate from this city to New Orleans is much too high when applied to barge transportation, and would be reduced to $\frac{1}{2}$ per cent., provided the obstructions were removed. The charge of $2\frac{1}{2}$ ¢ now levied upon goods shipped from this port to Liverpool, *via* the Gulf, is also much too high, and one of the reasons for so large a rate is the extra hazard of crossing the bar at the mouth of the Mississippi River. If the Government will construct the Fort St. Philip Canal below New Orleans, this rate will be very materially reduced, and added to the reduction in insurance will be a reduction in the rate of freight from New Orleans to Liverpool, induced by the cheapening of port expenses, which the construction of the Fort St. Philip Canal, or some similar improvement, will bring about.

Q. 7. What is the number of tons of freight transported each year from Saint Louis to New Orleans, and from New Orleans to Saint Louis?

A. The number of tons transported to New Orleans from this city by river in 1871, was 295,708. The number in 1872 was 322,831; showing a notable increase, when the fact that 1872 was a dry year is considered. It will be remembered that a period of forty-nine days of suspended navigation occurred in 1872, from ice and low water. The number of tons of freight transported by river from New Orleans to Saint Louis, in 1871, was 150,000, and 200,000 in 1872.

THE YEARLY SAVING TO BE EFFECTED.

Let us call the attention of your honorable committee to the following facts. The annexed table exhibits some of the leading articles produced in States bordering upon the navigable rivers of the Mississippi Valley:

State.	Wheat.	Corn.	Oats.	Rye and barley.
Illinois	30, 128, 405	129, 921, 395	42, 780, 851	4, 936, 978
Indiana	27, 747, 222	51, 094, 538	8, 590, 409	813, 730
Iowa	29, 435, 692	68, 935, 065	21, 005, 142	2, 556, 586
Kansas	3, 391, 198	17, 025, 525	4, 097, 925	183, 612
Minnesota	18, 866, 073	4, 743, 117	10, 678, 261	1, 110, 112
Missouri	14, 315, 926	66, 034, 075	16, 578, 313	823, 781
Ohio	27, 882, 159	67, 501, 144	25, 347, 549	2, 562, 111
Wisconsin	25, 606, 444	15, 033, 998	20, 180, 016	2, 970, 313
Total	177, 373, 119	420, 288, 527	149, 208, 536	15, 947, 223

Grand total 762,817,405 bushels.

At least one-third of this grain is moved from the point of production to the Eastern States, over expensive artificial routes, losing to the producer 10 cents per bushel, and to the consumer 10 cents per bushel, which might be saved by transportation down the natural water-paths of the valley and around the sea-coast. The sea-board ports received in 1873 a trifle over 100,000,000 bushels of grain and 8,000,000 barrels of flour. Here is 140,000,000 bushels of grain represented altogether. This grain paid a freight of 20 cents per bushel more than need be paid, provided the Government will properly improve the navigable waters of the Mississippi Basin, making \$28,000,000, which might have been saved—\$14,000,000 to the consumer, and \$14,000,000 to the producer. This saving, it is estimated, can be made upon the 140,000,000 bushels of breadstuffs which proceed eastward over the costly and artificial routes now employed, and no estimate is made on the live stock, provisions, hay, dairy products, fruits, &c., which the Eastern States annually draw from this valley; nor upon the tobacco, cotton, &c., which are annually shipped from here eastward, to be thence exported, instead of proceeding to New Orleans and taking ship there.

EXHIBIT C.

OBSTRUCTIONS AT THE MOUTH OF MISSISSIPPI—TONNAGE OF SHIPS—COSTS AND CHARGES—COMPARISON WITH OTHER CITIES.

The natural obstruction to all rivers are the bars which are formed by the junction of a lesser body of water with a larger, by which heavy particles of sand and gravel are deposited, which the current in its natural unconfined state will not carry to sea.

In all rivers running into salt water, the bars are more formidable than those made by emptying into fresh water.

The natural mouth of the Mississippi River is eighty miles wide, and has three principal channels. These are Southwest Pass, Pass à l'Ouvre, and Northwest Pass. Of these Pass à l'Ouvre and Southwest Pass have the deepest water over their bars.

From the point where Pass à l'Ouvre forks to the southeast, to the Gulf, it is fifteen miles, and Southwest Pass is seventeen miles. The natural depth of water over each bar is 14 feet for a distance of 2,900 feet. From where there is 20 feet of water on the inside of Pass à l'Ouvre to 20 feet outside is 8,700 feet; for the same at Southwest Pass it is 14,500 feet or nearly three miles.

At the forks the water is 30 feet deep, and from there to the bars it is sixty feet. The

river at the forks is one and a quarter mile wide—and thirty miles from one pass to the other outside.

The bars move seaward one foot each day by cutting off from the river-side, and depositing the same on the seaward side. By this law of nature, the bars go to seaward over one hundred yards each year.

If it were possible to build piers that would confine the channel, a continual extension would be necessary each year for all time to make it available.

Many eminent engineers have been sent by this Government to deepen the water over the passes. But until the plan of the Essayons was put in operation, there was no improvement made, and all the work and appropriation lost up to 1869.

Since that time the Essayons and McAllister by continual and constant work have made from 17 to 20 feet of water, and ships drawing from 18 to 19 feet pass, with few exceptions, without detention. For ships to be most profitable to share-owners to cross the ocean they should carry twenty-five hundred or three thousand tons dead weight, and to do so as now constructed would draw 23 to 25 feet of water. Consequently none of these ships can carry over twenty to thirty thousand bushels of grain, and the balance of space must be filled with cotton, so they will not draw over 18 feet. Thus it will be seen these ships cannot take over three-fourths of their tonnage, and of course the freight tax is much higher than it would be if the Government furnished the Mississippi River with an outlet equal to the Hudson, of 27 feet.

With 27 feet of water, ships of four and five thousand tons would come for cargoes, and could afford to transport for 20 per cent. less than small ships, as at present.

It is considered a fair equivalent for ships from here to charge one-quarter more price than is paid in New York. Thus, if freights are 12 pence in New York, they should be 15 pence here. But for the past four months they have been about an eighth higher.

From the mouth of the Mississippi the water is from 60 to 150 feet deep for four hundred miles up the river, from which point our Saint Louis friends have informed you fully. The number of steamers which have passed in and out of this river for the past year of 1872-'73 is eight hundred and twenty-nine; and sail-ships, for same time, sixteen hundred and forty-nine. Of these ships none have had to anchor outside for want of water to cross the bar, and but eight have had to lighter over the bar. These were all out the channel but one. There was a blockade of ships at Southwest Pass in May last, caused by a ship getting across the channel, which detained the steamer Memphis on the bar twenty-seven days, during which time she broke her propeller-wheel, and had to return on May 29, unloaded, to ship a new propeller, reloaded the same cargo, 50,000 bushels of corn and 2,500 bales of cotton, and passed out June 15, without detention.

This blockade caused \$7,000,000 in produce and cotton to be locked up, which, with the detention of ships, (some 75,) the direct damages could not have been less than \$700,000. This was caused in part by a want of authority in the Government engineer in charge to control deep-laden ships in crossing at high tides and when the Government steamers were not working in the channel. It is hoped by this committee that all these obstructions to the world's commerce will be removed by the building of the Fort Saint Philip Canal, which will give ships of the largest class easy and deep water into the river.

Our friends at the North contended, before the war, that this river was needed by all these States as a free highway for all nations, and to supply this need we ask your co-operation in obtaining an appropriation sufficient to meet the demands of the fourteen States and five Territories tributary to this river. Their present production of cereals per annum is 1,069,660,000 bushels; of this it is reasonable to calculate one-tenth for exportation or 106,966,000 bushels, for which the farmers demand cheap transportation to the ocean and the markets of the world. We find three water routes, viz: by the lake, canal, and Saint Lawrence River to Montreal; by lake, canal, and Hudson River to New York, and by the Mississippi River to New Orleans. The average freight from Chicago, for six months in the year, to Montreal, is 21 cents per bushel, charges there are 4 cents to get on ship, and ocean freight is 10 to 20 cents, making 45 cents to Liverpool; time in transit, fifty-three days. From Chicago, for seven months in the year, 25 cents to New York; charges to put on ship 4 cents, and ocean freight 13 pence or 20 cents, making 49 cents to Liverpool; time in transit, fifty-eight days. From Saint Louis, via Cairo to New Orleans, all the year round is 10 cents, to put on ship 2 cents, ocean freight 12½ pence, or 25 cents, making 37 cents to Liverpool; time in transit, thirty days. If one-half of the above amount was exported by the Mississippi River, the farmers of these States and Territories would save annually \$4,000,000, a sum sufficient to pay for all the improvement on this river in two years.

Grains of all kind heat most during their natural germinating season of April and May. It is during these days that grain spoils, when sultry hours occur, and there is no air to dry off the moisture that comes to the surface. These are much more frequent at the North than here. Mr. Higby, the proprietor of the elevator, furnishes the following account sales of a lot of corn shipped by him:

Account sales of 2,328 $\frac{20}{100}$ quarters Indian corn, shipped by L. J. Highby, esq., per *Saint Louis*, (steamship,) at New Orleans, and sold by John Stewart Oxley & Co., on account of whom it may concern, viz :

	£	s.	d.
Payment cash in one month, less two months' interest, 1871.			
July 28—100 quarters Reid & Glasgow, at 32s. 6d. per 480 pounds	162	10	0
July 28—2,224 $\frac{12}{100}$ quarters Ross T. Smyth & Co., at 32s. 6d. per 480 pounds	3,614	13	2
August 9—3 $\frac{20}{100}$ E. Hutchinson, at 24s. per 480 pounds, (sweepings)	4	7	3
2,328 $\frac{20}{100}$ quarters	3,781	10	5

Charges, marine insurance paid in New Orleans—

	£.	s.	d.
Freight on 18,624 $\frac{1}{2}$ bushels, at 9d. per bushel, of 60 pounds and 5 per cent.	733	6	8
Dock and town dues and entry	32	7	..
Quay portorage, stowing, and watching	33	7	4
Busheling, sacks, twine, and delivering	22	10	10
Fire insurance, £2 17s., interest on charges £10 16s. 2d.	13	13	2
Bank commission, $\frac{1}{2}$ per cent., £99s. 1d.; brokerage, $\frac{1}{2}$ per cent. £18 18s. 2d.	28	7	3
Commission and guarantee, at $\frac{3}{4}$ per cent.	132	7	..
	995	19	3

Net proceeds due October 31, 1871	2,785	11	2
July 17.—To your draft of 24th June, at 60 days, due 18th September	2,195	2	5
To interest on the same to 31st October	12	18	7
	2,208	1	..

Balance due 31st October, 1871	577	10	2
E. & O. E.			

JOHN STEWART OXLEY & CO.

LIVERPOOL, 12th August, 1871.

Mr. Highby says: "This cargo of mixed corn was shipped from here June 24, on the steamer *Saint Louis*. The thermometer stood at 94 the day it went on board, and it had as hot a passage through the Gulf as any cargo ever will have; yet when it arrived, which was in twenty-four days from the time of sailing, it sold at 2s. 6d. over the same grade from New York, as it was in better order." The consignees, John Stewart Oxley & Co., say "the corn could not have been in better condition."

It was bought at the market rate, 67@68c. per bushel, F. O. B., and the lot cost \$13,454.08, with \$255 net marine insurance; leaving a profit of \$1,447.69, as it sold for \$15,156.68.

EXHIBIT D.

Grain statistics of the port of New Orleans for the five years 1868-'69 to 1872-'73 inclusive.

RECEIPTS.

Years.	Corn.	Oats.	Wheat.	Rye.	Hay.	Bran.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bales.</i>	<i>Sacks.</i>
1868-'69	3,413,460	1,921,473	302,224	22,504	180,039	183,011
1869-'70	3,563,762	3,182,710	446,639	27,493	247,226	195,245
1870-'71	4,125,932	2,463,610	13,765	33,685	178,693	180,244
1871-'72	5,953,556	3,739,295	461	36,790	179,391	153,281
1872-'73	5,338,227	2,797,565	896	44,240	165,698	195,392
Totals for five years	22,394,937	14,104,655	764,005	166,712	951,047	907,173
Value in dollars	15,409,083	8,143,353	888,435	175,442	4,431,764	1,242,445
Grand total						\$30,290,523.

EXPORTS.

Years.	Corn.	Oats.	Wheat.	Rye.	Hay.	Bran.
1868-'69.....	1,245,931	(*)	297,211	(†)	(‡)	(‡)
1869-'70.....	652,025		440,495			
1870-'71.....	1,935,205		2,910			
1871-'72.....	2,540,028		33			
1872-'73.....	2,886,121		-----			
Total for five years.....	9,259,310		740,649			

*Almost entirely consumed by the local and interior trade.

†Consumed principally by the local distilleries.

‡Consumed by the local, coast, and interior trade.

Showing the ports to which corn and wheat were exported during the five years, 1868-'69 to 1872-'73, inclusive.

CORN.

Years.		New York.	Boston.	Cuba.	Other foreign ports.	Other United States ports.	Great Britain.
1868-'69.....	1,245,931	288,163	9,455	46,351	117,405	458,661	325,696
1869-'70.....	652,025	85,723	3,470	124,147	28,180	410,505	(*)
1870-'71.....	1,935,205	45,172	-----	194,194	781,870	7,8372	205,597
1871-'72.....	2,540,028	21,833	-----	35,982	29,248	1,750,540	632,425
1872-'73.....	2,886,121	66,432	-----	286,715	112,826	1,795,999	624,149
Total.....	9,259,310	507,323	12,925	707,589	1,069,529	5,124,077	1,837,867

*None.

WHEAT.

Years.		New York.	Great Britain.	Other foreign ports.	Baltimore.	Other United States ports.	Other foreign ports.
1868-'69.....	297,211	114,240	137,615	45,356	-----	-----	-----
1869-'70.....	440,495	21,092	-----	-----	2,155	400,829	16,419
1870-'71.....	2,910	-----	-----	-----	-----	-----	2,910
1871-'72.....	33	-----	-----	-----	-----	33	-----
1872-'73.....	-----	-----	-----	-----	-----	-----	-----
Totals.....	740,649	135,332	137,615	45,356	2,155	400,862	19,329

EXHIBIT E.

Depth of channel at the mouth of the Mississippi River from July 1, 1871, to July 1, 1873; also statement of grounded vessels, draught, time of detention, and cause.

Date.	Depth of channel, extreme low tide.	Name of vessels grounded.	Draught.	Time of detention.	Cause of grounding.
1871.	<i>Feet. In's.</i>		<i>Feet In's.</i>	<i>Hours.</i>	
July 7	18 9	Bark G. Godfrey.....	16	-----	Ran out of channel.
7	18 9	Bark Chas. Auguste.....	17	-----	Do.
10	17 6	Bark Sitka.....	-----	60	Do.
23	-----	Ship Gardner Colby.....	17	25	Do.
Nov. 14	-----	Steamer St. Mary.....	-----	-----	Do.
19	18	Ship M. C. Day.....	-----	10	Do.
28	19	Ship Maxwell.....	15 6	-----	Do.
30	19	Bark Hemia.....	16 6	7	Do.
Dec. 12	20 3	Ship Antarctic.....	16 6	8	Do.
13	20 5	Steamer J. C. Harris.....	-----	16	Do.
15	19	Ship Canterbury.....	16 6	37	Do.
25	19	Steamer Rapidan.....	11	-----	Do.
1872.					
Jan'y 9	18	Bark R. Shilburnt.....	17 6	-----	Do.
11	19	Steamer Victor.....	17 6	-----	Do.
14	19 6	Steamer Statesman.....	18 6	120	Do.
24	18 6	Steamer City of Galveston.....	14	12	Do.

EXHIBIT E.—Depth of channel at the mouth of the Mississippi River, &c.—Continued.

Date.	Depth of channel, extreme low tide.	Name of vessels grounded.	Draught.	Time of detention.	Cause of grounding.
	<i>Feet. In's.</i>		<i>Feet In's.</i>	<i>Hours.</i>	
1871.					
Feb. 11	19	Steamer St. Louis	18	19	Ran out of channel.
17	18	Steamer Chrysolite		18	Do.
March 10	19	Steamer Koln	18	11	Do.
28	20	Ship Wyoming		16	Do.
29	20	Ship Ella S. Thayer	17 6	16	Do.
29	20	Ship Hermine			Do.
April 7	18 6	Ship C. H. Southard	16 6		Do.
7	18 6	Mischief			Do.
7	18 6	M. Pollock			Do.
8	18 6	Bark			Do.
8	18 6	Bark			Do.
16	17 6	Ship N. Dormio	18		Do.
May 7	18	Ship Union	18 6		Attempted to cross at low tide.
June 9		Ship Thomas Harwood	17 9		Ran out of channel.
11	18	Bark M. Gelatalo	17		Do.
15	18	Bark			Do.
17	18	Steamer Alice	14		Do.
23	18	Ship Rochester	19		Do.
26	18	Ship Charlotte	19		Do.
July 1	18	Ship M. Pollock		14	Do.
13	19	Ship Europa		72	Do.
15	19	Brig Mary M. Francis		26	Do.
Aug. 4	19 6	Brig Duke of Wellington	17	22	Do.
8	19 6	Brig M. M. Francis		24	Do.
10	20	Bark Sarah A. Staples		12	Do.
20	19 6	Bark Waverly	18 6	18	Do.
Sept. 14	19	Steamer St. Louis	19 6	121	Do.
21	18	Bark J. Harnett	18 6	46	Do.
23	18 6	Schooner George Peabody	15 6	30	Do.
Oct. 7	18 6	Bark Maggie Chapman	18 6	3	Do.
Nov. 11	17	Schooner Willis		168	Do.
Dec. 19	17	Ship E. C. Scranton		24	Do.
10	17	Ship Leone		15	Do.
13	17	Ship Expounder		7	Do.
15	17	Steamer Gracia	18 6	9	Do.
17	17	Steamer Louisiana			Do.
29	17	Ship Advance	18 6	1	Do.
30	17	Ship Arabia	12 6	4	Do.
1873.					
Jan'y 2	17	Steamer Minnesota	20 6	5	Insufficiency of water.
3	17	Steamer Liberty	19	19	Out of channel.
16	17	Ship Mataura	18	95	Do.
24	17	Steamer Annie Ainsley	17 6	3	Do.
Feb. 13	17 6	Bark Shakonjarl		10	Do.
22	18	Ship Research	19	21	Probably low tide.
26		Brig Guiseppe		24	Out of channel.
March 8		Steamer New Orleans	17 6		
10		Ship Dillhare	19 6		
12	16 6	Bark Nippon	16 6		
12		Bark Augusta	16 6		
12		Bark Runer			
15	16	Steamer New Orleans	17		
15		Steamer Mississippi			
15	16	Ship Reunion	13		
16		Steamer Vandalia	18 9		
18		Steamer General Meade			
22	17	Bark Annie Kimble	15		
22	17	Steamer Legislator	19		
23		Bark Royal Harry	15 6		
23		Bark Evioia	15 6		
23		Steamer Student			
26	16	Ship Sea Flower	17 6		
27		Bark Rowena	15 6		
27		Bark Australia	14 9		
27		Steamer Missouri	18 8		
29	15	Steamer Gen. Sedgwick	15		
29	15	Steamer Juan G. Meigs	13		
30		Bark Japan			
30		Steamer Yazoo	18 6		
30		Bark Unknown			
30		Steamer Cortes			
31		Bark Gasper	14 6		
May 2	15	Schooner H. V. Turner	5 6	24	Out of channel.
16	17	Schooner Geo. Howe	10 6	12	Do.
18	17	Steamer Alabama	18 8	136	Probably low tide.
June 15	17 6	Steamer Memphis	18 3	50	Do.
16	17 6	Steamer Legislator	18 6	148	Do.
25	17 6	Steamer Margaret	10	7	Out of channel.
26	17 6	Steamer New Orleans	18 3	18	Probably low tide.

EXHIBIT G.

The following commercial statistics have been received from the office of the collector of the port of New Orleans.

	1870 and 1871.	1871 and 1872,	1872 and 1873.
Number of entrances, steam-vessels	916	616	385
Tonnage	949, 230. 06	639, 943. 88	404, 427. 00
Number of clearances, steam-vessels	1, 201	704	444
Tonnage	1, 231, 161. 15	739, 850. 21	473, 965. 00
Number of entrances, sailing-vessels	1, 091	945	838
Tonnage	562, 824. 46	436, 650. 77	457, 836. 00
Number of clearances, sailing-vessels	1, 141	1, 000	811
Tonnage	566, 415. 69	457, 996. 23	517, 833. 00
Total value of imports— Specie, free and dutiable	\$19, 331, 119 00	\$18, 542, 188 00	\$19, 933, 180 00
Total value of exports— Domestic to foreign countries	93, 953, 081 00	89, 501, 149 00	104, 329, 965 00
Total value of exports— Foreign to foreign countries	1, 293, 710 00	1, 301, 700 00	285, 127 00
Grand total of exports	95, 246, 791 00	90, 802, 849 00	104, 615, 092 00
Amount of revenue collected on imports	5, 899, 390 85	5, 184, 053 93	3, 732, 550 78

ANALYSIS.

The number of vessels has steadily decreased. The tonnage has decreased in a lesser ratio. There is but unimportant though favorable change in imports.

There is a marked advance in exports not accounted for by increase in value of our staple products for exports.

A greater export by nearly \$10,000,000 was effected in 1872-73 than in 1870-71, and with about one-half the number of vessels and one-half the tonnage.

DEDUCTIONS.

A larger class of steamships and sailing-vessels is being attracted to this port.

EXHIBIT II.

SHOWING SCANT RAILROAD FACILITIES AND THE ABSENCE OF PREJUDICE ON THE PART OF RAILROADS TO INCREASED WATER-TRANSPORTATION.

We find in reference to railroad transportation between the South and West, that we have but one through-line between here and all western cities; or, taking Chicago and Saint Louis as the termini or depots, and New Orleans as the entrepot, and beginning at this line which has just been completed and is now in full operation. This line, by the completion of the one hundred and six miles between Jackson, Tenn., and Cairo, Ill., shortens the distance to Chicago to nine hundred and twelve miles, and to Saint Louis to six hundred and ninety-three miles from New Orleans, and will save in time some twelve hours to Saint Louis and thirteen hours to Chicago for passengers, and will quicken or lessen the time to Saint Louis on freight to three days, and from here to Chicago to five days. The demand in the West for our home productions of rife, molasses, moss, cotton, and sugar will thus be largely increased by celerity of transportation and certainty of delivery as well as the avoidance of any insurance charges, but especially will this be the case of all imports to all western ports of delivery which the increase of imported goods via New Orleans have already increased, and will still further increase in number the western ports of delivery and entry. It is evident to any one at all conversant with the wants of the South and the capacity of the West, that the need of the products of both are greatly augmented by the quickness with which they can be moved and our cheapness of transportation. While admitting that river transportation is cheaper than rail, and that water is not liable to damage like rail, we claim that for both competitors to this whole business there is room, need, and work; and that all we need is a sufficient outlet and inlet to and from the markets of the world of sufficient capacity to give us enough business for both; and the appro-

priation that has been made for one custom-house in another locality would give us this outlet at the *bar* of the Mississippi. Our rail transportation, mile for mile, both ways, north or west, will be cheaper than by any eastern route; and, although we cannot at this moment give the exact figures upon grain from the grain-growing West, we can safely assume that 26 or 27 cents per bushel will bring corn from almost any point in the West tributary to Cairo or Saint Louis, by rail to New Orleans, and a return freight of not over 55 cents per 100 pounds to Chicago, and 40 cents to Saint Louis, on all of our home products, tropical fruits, &c. The distance from Chicago to New York being nine hundred and sixty-one miles, and from here to Chicago nine hundred and twelve miles, our having a return freight each way will give any south and west route the advantage of a double business; and the low price of freights from abroad on imports have been so thoroughly canvassed elsewhere in this report we do comment upon them here.

EXHIBIT I.

REPORT ON THE TOBACCO TRADE.

The territory bordering on the Lower Ohio, Cumberland, and Tennessee Rivers, and the State of Missouri, for which New Orleans is the outlet and natural market, produces annually one hundred and fifty to one hundred and seventy thousand hogsheads of tobacco.

The average product of Southern Kentucky, Tennessee, Indiana, Illinois, and Missouri, for the past five years, is set down at one hundred and sixty thousand two hundred hogsheads per annum.

	Hogsheads.
Average crop of Kentucky, past five years.....	80,200
Tennessee	21,400
Indiana.....	27,600
Illinois	12,200
Missouri	18,800
Total.....	160,200

Nearly one-half of this amount is taken up in the West, Northwest, Eastern States, and Canada, for home manufacture and consumption, while eighty to one hundred thousand hogsheads go to the sea-board markets, viz: New-York and New Orleans, and is there purchased and exported to the different states of Europe.

Prior to the war, New Orleans enjoyed nearly all the export trade in this product.

The receipts of tobacco at New Orleans for ten years prior or preceding the war, was six hundred and sixty-eight thousand seven hundred and forty-nine hogsheads, the export value of which was \$82,482,815.

Since 1865, or close of the war, nine years' receipts here have been one hundred and seventy-nine thousand three hundred and sixty-eight hogsheads. Value of same, \$33,136,482.

The growth of this trade at the port of New Orleans, since the war, is very marked and encouraging, rising from two thousand four hundred and ten hogsheads the year succeeding the war, to thirty thousand eight hundred and forty-one hogsheads this past year, valued at for past year, \$4,724,500.

This whole trade properly belongs to New Orleans, and would nearly all come here had we sufficient capital, and ocean freights were not relatively higher from this than other sea-ports, mainly owing to lack of water on the bars.

Average freights from the west by steamboats is four dollars per hogshead or twenty-seven cents per hundred pounds. Tobacco has been brought here this season by steamboat at 15 cents per hundred pounds, or two dollars and a half per hogshead. By the barge system all the tobacco could be brought to this market at 8 or 10 cents per hundred pounds.

Railroad freights from western tobacco markets to eastern sea-boards will average about 60 cents per hundred pounds.

Expenses of hauling tobacco in New Orleans :	Expenses of hauling tobacco in New York :
Storage per month..... 25 cts. per hhd.	Storage per month..... 40 cts. per hhd.
Drayage..... 75 " "	Drayage..... \$1 25 " "

From the foregoing figures it will be seen that there is a saving of over five dollars and fifty cents per hogshead in favor of New Orleans over New York, and by the barge system the difference would be seven dollars per hogshead in favor of New Orleans.

EXHIBIT J.

Flour received, consumed locally, and exported from New Orleans from September 1, 1851, to August 31, 1873, omitting 1861 and 1862.

			Barrels.
Received from September 1, 1851, to August 31, 1852			927, 212
1, 1852,	" 31, 1853	.....	806, 672
1, 1853,	" 31, 1854	.....	874, 256
1, 1854,	" 31, 1855	.....	673, 111
1, 1855,	" 31, 1856	.....	1, 120, 974
1, 1856,	" 31, 1857	.....	1, 290, 597
1, 1857,	" 31, 1858	.....	1, 538, 742
1, 1858,	" 31, 1859	.....	1, 084, 978
1, 1859,	" 31, 1860	.....	973, 800
1, 1860,	" 31, 1861	.....	1, 009, 201
1, 1863,	" 31, 1864	.....	399, 897
1, 1864,	" 31, 1865	.....	790, 824
1, 1865,	" 31, 1866	.....	993, 331
1, 1866,	" 31, 1867	.....	922, 125
1, 1867,	" 31, 1868	.....	868, 086
1, 1868,	" 31, 1869	.....	1, 276, 921
1, 1869,	" 31, 1870	.....	1, 641, 477
1, 1870,	" 31, 1871	.....	1, 541, 281
1, 1871,	" 31, 1872	.....	1, 086, 488
1, 1872,	" 31, 1873	.....	1, 046, 124

Exports of flour from the port of New Orleans from September 1, 1851, to August 31, 1873, omitting the years 1861 and 1862.

			Barrels.
Exported from September 1, 1851, to August 31, 1852			544, 711
1, 1852,	" 31, 1853	.....	520, 415
1, 1853,	" 31, 1854	.....	585, 969
1, 1854,	" 31, 1855	.....	345, 743
1, 1855,	" 31, 1856	.....	729, 442
1, 1856,	" 31, 1857	.....	904, 910
1, 1857,	" 31, 1858	.....	1, 052, 756
1, 1858,	" 31, 1859	.....	605, 500
1, 1859,	" 31, 1860	.....	386, 511
1, 1860,	" 31, 1863	.....	448, 893
1, 1863,	" 31, 1864	.....	50, 641
1, 1864,	" 31, 1865	.....	330, 287
1, 1865,	" 31, 1866	.....	290, 623
1, 1866,	" 31, 1867	.....	282, 435
1, 1867,	" 31, 1868	.....	285, 704
1, 1868,	" 31, 1869	.....	377, 236
1, 1869,	" 31, 1870	.....	556, 323
1, 1870,	" 31, 1871	.....	513, 947
1, 1871,	" 31, 1872	.....	485, 550
1, 1872,	" 31, 1873	.....	479, 749

Local consumption of flour at the port of New Orleans from September 1, 1851, to August 31, 1873, omitting the years 1861 and 1862.

			Barrels.
Consumption from September 1, 1851, to August 31, 1852			382, 501
1, 1852,	" 31, 1853	.....	288, 257
1, 1853,	" 31, 1854	.....	288, 287
1, 1854,	" 31, 1855	.....	327, 365
1, 1855,	" 31, 1856	.....	391, 532
1, 1856,	" 31, 1857	.....	385, 687
1, 1857,	" 31, 1858	.....	485, 986
1, 1858,	" 31, 1859	.....	479, 478
1, 1859,	" 31, 1860	.....	587, 289
1, 1860,	" 31, 1863	.....	560, 308
1, 1863,	" 31, 1864	.....	349, 256
1, 1864,	" 31, 1865	.....	460, 537
1, 1865,	" 31, 1866	.....	702, 908
1, 1866,	" 31, 1867	.....	639, 690
1, 1867,	" 31, 1868	.....	582, 382
1, 1868,	" 31, 1869	.....	899, 685
1, 1869,	" 31, 1870	.....	1, 085, 154
1, 1870,	" 31, 1871	.....	1, 027, 334
1, 1871,	" 31, 1872	.....	600, 908
1, 1872,	" 31, 1873	.....	566, 375

Value of flour received at the port of New Orleans from September 1, 1851, to August 31, 1873, omitting the years 1861 and 1862, giving the value each year.

From September 1, 1851, to August 31, 1852.....	\$3,708,848
1, 1852, " 31, 1853.....	3,639,024
1, 1853, " 31, 1854.....	6,119,792
1, 1854, " 31, 1855.....	5,533,166
1, 1855, " 31, 1856.....	8,407,305
1, 1856, " 31, 1857.....	9,034,179
1, 1857, " 31, 1858.....	7,078,213
1, 1858, " 31, 1859.....	6,508,868
1, 1859, " 31, 1860.....	6,036,625
1, 1860, " 31, 1863.....	7,064,407
1, 1863, " 31, 1864.....	
1, 1864, " 31, 1865.....	7,750,075
1, 1865, " 31, 1866.....	10,429,975
1, 1866, " 31, 1867.....	11,987,625
1, 1867, " 31, 1868.....	9,114,714
1, 1868, " 31, 1869.....	8,912,909
1, 1869, " 31, 1870.....	9,848,852
1, 1870, " 31, 1871.....	9,710,070
1, 1871, " 31, 1872.....	7,612,426
1, 1872, " 31, 1873.....	7,328,868

EXHIBIT J—Continued.

Exports of flour from the port of New Orleans from September 1, 1851, to August 31, 1873, omitting the years 1861 and 1862, and showing to what places exported.

From September 1 to August 31.	1851 and 1852.	1852 and 1853.	1853 and 1854.	1854 and 1855.	1855 and 1856.	1856 and 1857.	1857 and 1858.	1858 and 1859.	1859 and 1860.	1860 and 1861.
New York	94,638	49,004	33,129	86,133	131,591	141,494	129,242	71,286	10,862	4,976
Boston	61,124	35,155	7,181	93,158	200,179	241,466	258,392	247,516	41,524	3,375
Other United States ports	179,911	194,607	117,940	78,846	108,686	141,142	173,321	165,397	247,931	205,544
Great Britain	138,569	170,569	190,455	27,465	99,862	72,758	268,428	6,469	6,341	186,278
Cuba	6,681	1,296	5,905	707	3,947	17,274	3,566	4,052	6,438	901
Other foreign ports	63,764	69,784	231,268	59,436	185,177	290,776	219,807	107,778	74,115	47,817
Philadelphia	24		91					3,002		2

From September 1 to August 31.	1863 and 1864.	1864 and 1865.	1865 and 1866.	1866 and 1867.	1867 and 1868.	1868 and 1869.	1869 and 1870.	1870 and 1871.	1871 and 1872.	1872 and 1873.
New York	8,099	177,259	78,618	74,733	61,974	26,242	21,103	4,467	19,317	9,965
Boston	5,168	113,618	44,047	52,421	38,042	6,420	3,814			
Philadelphia	450	974	1,947	7,704	2,762	296				
Other United States ports	590	16,166	120,233	120,017	88,717	159,000	302,527	351,540	381,078	363,961
Great Britain	6,194	1,710	1,513	1,504	324	68,372	79,910	14,208	1,222	10,746
Cuba		2,499	10,746	44	70,078	79,496	100,102	104,131	57,278	36,986
Other foreign ports	30,740	18,061	38,096	25,557	23,807	37,410	48,867	39,588	20,399	15,304
Baltimore			423	455						

EXHIBIT K.

SAIL AND STEAM TONNAGE TO AND FROM NEW ORLEANS SINCE 1864.

NEW ORLEANS, November 10, 1873.

To J. H. KENNARD, Esq.,

Chairman of Committee on Transportation, New Orleans:

DEAR SIR: I beg herewith to hand you statement of amount of sail and steam tonnage, foreign and American, plying to and from the port of New Orleans since 1869 to present date.

Since 1869, there has been loaded outward from the port of New Orleans tonnage to the amount of 886,569 tons average per year, or a total of 2,401,365 sail tonnage and 2,031,480 steam tonnage during five years past.

Fully two-thirds of this tonnage, if loaded with heavy cargo to their full draught capacity, would be unable to cross the bar at our river-mouth, owing to the shoal in water during a great portion of the year. Consequently, in the event of taking cargoes of corn or wheat, they have been confined, in a great measure, to taking half or part cargoes, depending upon cotton or other light cargo for filling up. The same difficulty occurs as to inward cargoes; particularly those from Great Britain. Such cargoes imported from that country to the United States are, almost without exception, heavy cargoes. Consequently ships bound to this port are obliged to confine themselves to a draught of water in loading, say eighteen feet during winter months, and sixteen feet during summer, owing to stage of water on the bar.

Thus many of our finest ships whose deep-load draught-capacity would be from twenty to twenty-two feet are obliged to confine themselves to limited draught, thereby causing great loss to the ships' owners.

During the low stage of water at the bar-mouth of the Mississippi, a complete blockade is at times formed by the sticking on the bar of some five or six ships, these often remaining there for weeks, during which time ships arrive outside inward bound, also from the city outward bound, quite a fleet thus accumulating both inside and outside, unable to pass either way owing to this effective blockade, thus causing incalculable loss to both ship-owner and shipper, to say nothing of heavy bills for towage, arising from these causes.

STEAMSHIPS.—There is great increase in this type of ship, there being now plying regularly to this port five lines of steamers of the finest class, two to Germany and three to Liverpool, representing tonnage to the extent of 37,500 tons; besides transient steamers, touching for cargo, to amount of 17,700. These apply to foreign alone.

Coastwise we have steam tonnage to amount of 30,000 tons. The majority of these steamers are fitted for carrying corn in bulk, but are debarred from taking more than half or two-thirds cargo, owing to objections as previously stated, insufficiency of water on the bar.

Were there a draught of say from 25 to 27 feet to be depended upon at the mouth of our river, double or treble the amount of grain would no doubt be shipped from our port—more than at present—to say nothing of the increase that would occur in our steam tonnage, owing to the fact that they would be enabled to load to their utmost capacity with any cargo that offered.

The southern route has proved to be the most desirable for many reasons. The losses or disasters by this route have been less, as proved by comparison, than any other.

Climatic objections, which have been raised against this route for cereals, are without foundation, there never having been, to the knowledge of the writer, a single case where corn has been shipped in a sound condition, any damage arising during the voyage; but, on the contrary, has been landed in fine order at the port of destination.

I am, dear sir, respectfully, yours,

A. K. MILLER.

EXHIBIT L.

Statement as to the Memphis detained on the bar—Condition of her cargo, etc.

NEW ORLEANS, November 10, 1873.

Statement of sundry expenses incurred by the steamship Memphis, caused by her detention on the bar at Southwest Pass for want of sufficient depth of water, and the breaking of her propeller.

Amount paid the New Orleans Tow-boat Association for assistance, while lying on the bar, to work the steamer over and towing her to the city again after breaking the propeller.....	\$8,400 00
Elevator charges, storing and handling cargo.....	2,884 00
Valette dry-dock charges for labor and carpenter-work.....	3,825 00
Machinist's and labor bill, fitting propeller.....	1,300 00
Stevedore's bill, discharging and loading.....	5,000 00
Painting steamer's bottom.....	1,000 00
Surveyor, inspector, and extending protest.....	800 00
Putting cargo in good shipping condition, and insurance on the same.....	900 00
Cost of propeller, about.....	2,500 00
Other charges, including commissions, &c.....	5,000 00
	31,609 00

The breaking of the propeller is supposed to have been caused by a sunken log, or some obstruction on the bar.

The time the grain was in the ship before landed here was about thirty days, and from the time when first taken on board, until landed in Liverpool, about seventy-five days.

The condition of the corn when discharged here at the elevator was as good as when it first went on board.

The steamers of the Mississippi and Dominion Steamship Line are well adapted for carrying grain in bulk; all of them having tight bins and put in with great care and expense, being also well ventilated.

EXHIBIT M.

Improvements of the mouths of the Mississippi and Fort Saint Philip Canal.

UNITED STATES ENGINEER OFFICE,
New Orleans, La., November 8, 1873.

Chairman Committee on Obstructions, New Orleans Chamber of Commerce:

DEAR SIR: In answer to your request, I send you the following on improvements at the mouth of the Mississippi and on Saint Philip Canal:

IMPROVEMENTS.

For record of the past two years, see Appendix A.

For the benefit commerce has derived from the work, see Appendix B.

WHAT MAY BE DONE.

With the appliances now available, with a new dredge added in 1877, and one every five years thereafter, (at a cost of \$250,000,) to take the place of those worn out in service.

With an appropriation each year of \$150,000 for running expenses, repairs, &c.

With the superintending engineer in full control of the channel excavated, authorized to assess fines for damage arising from willfulness or ignorance, and with power to enforce collection of fines in the United States courts, there can be made and maintained a channel 20 feet in depth at extreme low tide, either at Southwest Pass, or at Pass a L'Outre.

Without the appropriation, nature will keep a channel of 14 feet.

With the appropriation, and without full control over the use of the channel made, the latter may be kept at a depth ranging from 16 feet to 21 feet.

The present mode of, and appliances for, dredging have given better results than any heretofore tried, and are esteemed the best that can now be adopted.

THE CANAL.

There is no doubt of its feasibility. It will probably cost \$7,500,000. It will be seven miles in length. It will have but one lift-lock, and that with only a lift of from 1 to 6 feet; the latter varying with the stage of the river.

No river water will be admitted into the trunk of the canal.

ADVANTAGES TO COMMERCE.

The canal will admit to the port of New Orleans vessels of the greatest freighting capacity; in consequence, cheapening freights on cheap and bulky goods.

It will have the effect of reducing tonnage charges fully 100 per cent. below the present charges.

It will admit vessels without delay.

It will be a work of permanent improvement, as such inspiring confidence in commercial ventures to this port, and free from all the uncertainties attending dredging, viz: effects of storms, careless pilotage or towage, suspension on account of breakage of machinery, or, what would be more, on account of failure to make appropriation.

It will place New Orleans on a footing with the most favored port in the United States as regards depth of entrance, and on an equality with the principal European ports with which she trades.

It will give the Valley of the Mississippi an economical and certain route to the sea at all seasons of the year.

I believe this covers the points you made.

Very respectfully, your obedient servant,

C. W. HOWELL,
Captain Engineers, U. S. A.

EXHIBIT N.

ACTUAL EXPENSES OF TRANSPORTATION FROM SAINT LOUIS TO NEW ORLEANS BY BARGES.

The Future City, tow-boat, and five barges of the Mississippi Valley Transportation Company: Actual *expenses* from Saint Louis to New Orleans, twelve hundred and fifty miles, (each barge is 1,500 tons capacity:)

Cost of tow-boat, new this year.....	\$60,000
Cost of barges, \$15,000 each, new also.....	75,000
Interest on same at 7 per cent., six days.....	\$155 00
Coal, 50 tons per day, at \$2.50, six days.....	750 00
Engineers, one \$3 and one \$5 per day, six days.....	48 00
Captain, at \$5 per day, six days.....	30 00
Men, ten, at \$1.50 per day each, six days.....	90 00
Pilots, two, at \$5 per day each, six days.....	60 00
Cook, at \$1.50 per day, six days.....	9 00
Board per man, each day, 16 cents, six days.....	48 00
Oil, tallow, and waste, \$2 per day, six days.....	12 00
Maintenance six boats, \$18.24 per day, six days.....	109 44
Total	1,311 44

Cost per ton, moved 1,250 miles, 17.49 cents.

Cost per ton per mile, $\frac{7}{50}$ of a mill.

Cost per bushel of wheat, 1,250 miles, $5\frac{1}{4}$ mills.

EXHIBIT O.

EXPENSES OF STEAMER JOHN F. TOLLE FROM SAINT LOUIS TO NEW ORLEANS.

NEW ORLEANS, November 21, 1873.

Steamer John F. Tolle; tons capacity, 1,650; value, \$65,000:

Interest six days, at 7 per cent.....	\$74 80
Coal, twenty-four tons per day, six days, at \$2.50.....	144 00
Engineers, two, at \$3.33 and \$2.50 per day, six days.....	34 98
Captain, \$5 per day, six days.....	30 00
Pilots, two, each \$6.67, six days.....	79 98
Men, sixteen, at \$1.16 $\frac{2}{3}$ per day, six days.....	112 02
Cook, at \$2 per day, six days.....	12 00
Board of twenty-two men, at 50 cents per day, six days.....	66 00
Oil, tallow, waste, &c., \$4 per day, six days.....	24 00
Maintenance per day, \$15, six days.....	90 00
Total	667 80

Cost per ton moved 1,250 miles, 40.47 cents.

Cost per ton moved one mile, 3.47 mills.

Cost per bushel of wheat, 1,250 miles, 1.2 cents.

EXHIBIT P.

LATEST CORN SHIPMENT FROM NEW ORLEANS TO LIVERPOOL.

To JOHN H. KENNARD, Esq., *Chairman*:

We are, November 28, 1873, just in receipt of account of sales in Liverpool of a cargo of corn shipped on steamship Louisiana, October 26, of 17,479 bushels, which arrived there November 16, and sold for the highest market price, 34 shillings and 6 pence per imperial quarter, which netted 65 $\frac{1}{4}$ cents per bushel of 56 pounds in New Orleans. This cargo cost 42 cents at Saint Louis, and paid 14 cents river freight from Saint Louis, and 1 cent transfer charges, with 14 pence ocean freight. Had there been 9 feet of water above Cairo instead of 4 $\frac{1}{2}$, the river freight would have cost but 8 cents.

L. J. HIGBY,
President of Elevator.

A BILL to provide for the construction of the Fort Saint Philip canal and its maintenance as a national public highway.

Whereas the Mississippi River is a national highway, the improvement and defense of which concern the whole people; and whereas the repeated experiments of the Government to clear its mouths from obstruction have failed to relieve the commerce of the Mississippi Valley permanently of the burdens arising therefrom; and whereas careful surveys and estimates, made under orders of the Government, have demonstrated the feasibility and economy of a ship-canal to connect the Mississippi River with the deep water of the Gulf of Mexico; and whereas said canal will afford great protection as a military work, and will be of vast importance to the United States in facilitating and increasing the commerce between the States and foreign countries: Therefore,

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That a ship-canal, to connect the Mississippi River with the Gulf of Mexico, commencing at some convenient point on the Mississippi River below Fort Saint Philip, on the east side of said river, and terminating at some convenient point in Breton Island Pass in the Gulf of Mexico, shall be constructed and maintained at the expense of and under the supervision and control of the Government of the United States.

SEC. 2. That the dimensions of said canal shall be such as to give free passage to all vessels of commerce and war that may be employed in the commerce of the port of New Orleans, to be determined by the engineers in charge,

SEC. 3. That the Secretary of War shall have power and authority, by engineers and agents employed by him, to enter upon and appropriate to the use of the United States, for the purposes aforesaid, any lands for the construction of said canal, with guard-gates, waste-weirs, locks, lock-houses, basins, bridges, and other erections and fixtures as may be necessary for the safe and convenient navigation of the said canal.

SEC. 4. That the location of said canal shall be that indicated in the report of the engineers.

SEC. 5. That it shall be the duty of the Secretary of War, as soon as practicable after the passage of this act, to secure the right of way for such canal, to acquire the title to such lands as may be necessary by agreement, purchase, or voluntary cession from the owners, if it can be done on reasonable terms; and if that shall be found impracticable, then the Secretary of War may at any time thereafter enter upon and take possession of said lands and appropriate the same to the United States for the purposes aforesaid; and it shall be his duty to apply to the district court of the United States for the district of Louisiana, then in session, or if not in session, at its first session after such appropriation is made, for the appointment of two commissioners, who shall be freeholders in the parish where the land lies, one to be designated by the United States and one by the owner of the land, who shall appraise said lands and report the same to the district court as aforesaid, within ten days from the date of their appointment; that such report shall constitute the measure of the value of such land so appropriated. That in all cases where such appraisers fail to agree, the court shall forthwith appoint as umpire a freeholder residing in the parish where the land lies, whose decision shall constitute the measure of the value of such lands as aforesaid.

That in all cases where the amount of the value of the land in question exceeds five hundred dollars, (\$500,) the allegation to be accompanied with affidavit, either party shall have the right of appeal to the circuit court of the United States upon compliance with existing rules as to bond, &c.

That in no case shall such appeal operate to suspend the entry upon occupation or use of such lands, but shall be strictly confined to determining the proper sum to be paid by the Government.

Ten days' notice shall be served upon the owner of such lands prior to the appointment as aforesaid, which notice shall state the time and place where such appraisal will be made. If the owner be an absentee, notice shall be served by *ten days'* publication in the official journal.

No entry upon said lands shall be made for the purpose of use and occupation until the price settled upon shall have been paid to the owner or his agent, or tendered and refused.

SEC. 6. That the Secretary of War shall cause said canal to be made and constructed through the lands to be taken and appropriated as hereinbefore provided, and that he shall cause said work to be entered upon as soon as practicable, within a time not exceeding six months from the date of the passage of this act, and shall cause the same, with all necessary equipments, to be constructed and completed ready for navigation at the earliest possible day consistent with the public interests; and for that purpose he shall detail as many skillful and experienced officers of the United States Engineer Corps as he may deem necessary to superintend and direct said work under his orders.

SEC. 7. That the Secretary of War may cause, at his discretion, said work, or any part thereof, to be put under contract to the lowest bidder who complies with the stipu-

lations of the contract to the satisfaction of the Secretary of War, who shall always reserve the right to reject all bids. That he shall report to Congress on the first Monday of December of each year, or as soon thereafter as may be, all the bids, with the names of the bidders and to whom contracts have been awarded: *Provided*, That no contract shall be made except after — days' public advertisement for proposals in at least two public journals in the cities of New York, New Orleans, and Saint Louis, and such other publications as the Secretary of War may deem necessary to give it due publicity. That good and solvent security for the execution of the contracts shall be furnished in all cases to the satisfaction of the Secretary of War.

SEC. 8. That said canal shall at all times, night and day, be open to the free use and navigation of all vessels and craft belonging to the United States, and, until otherwise provided, to all nations in commercial amity with the United States, free from toll or charges.

SEC. 9. That after its completion such canal shall be maintained in good order and repair at the expense of the United States, and operated under the supervision of an officer to be detailed by the Secretary of War for said duty and under his orders; and said canal shall be a military, naval, postal, and public highway, connecting the Mississippi River and the Gulf of Mexico; that the admiralty jurisdiction of the United States district court for the district of Louisiana be extended so as to include all controversies arising upon this canal between vessels navigating the same, as if said controversies were upon the high seas.

SEC. 10. That the Secretary of War shall have power to establish all needful rules and regulations not inconsistent with the laws of the United States concerning the use and navigation thereof, and provide such fines for the violation of such rules and regulations as may be by him deemed expedient, and a copy thereof shall be filed in the office of the clerk of the United States district court for the district of Louisiana; and printed copies of said rules shall be framed and hung in a conspicuous place on board all canal and river tow-boats as well as in the offices at either end of the canal; also in the public rooms of the New Orleans Chamber of Commerce and Cotton Exchange, under a penalty of — dollars for each omission: one-half for the benefit of any informer, and one-half for the benefit of the canal repair-fund: *Provided*, That Congress may at any time revise or abrogate such rules.

SEC. 11. That the sum of — dollars be, and the same is hereby, appropriated out of any moneys in the Treasury of the United States not otherwise appropriated, to carry into effect the provisions of this act, and that the moneys hereby appropriated shall remain and be at the disposal of the Secretary of War, and subject to his control, for the purposes named in this act, until the work herein provided for is completed, any law or regulation to the contrary notwithstanding.

JOHN H. KENNARD.
W. B. KOONTZ.
WM. M. BURWELL.

Examination of Hon. W. M. BURWELL, on the subject of Mississippi River tonnage and reciprocal freights with the West Indies and South America.

Mr. BURWELL: Mr. Chairman, the subject upon which I am specially requested to report is in regard to the state of commerce between the Valley of the Mississippi and the Spanish American States. There are many of us who believe that the trade lines of latitude cross above us, and that a very large proportion of the western productions will move directly to Atlantic ports for exportation, as they will and have received the foreign importations through the same ports. I would say that in the estimation of many in this city, merchants and others, the most important object of improving the Mississippi River will be to establish a direct line of communication between the immense productive interior of the West and the consuming markets of and beyond the tropics. There is a physical impediment in the way which we ask Congress to remove; but there are diplomatic impediments also, which are even greater, as far as that line of trade is concerned, than the physical impediments to which I referred. The diplomatic impediments consist in the want of reciprocal trade-treaties between the United States and

the Spanish American States that are adjacent to or lie south of us. Gentlemen know, and especially members of the Senate of the United States, better than we do, the precise state of the treaties between the United States and the Spanish American powers; and they will remember that, with the exception of a few special conventions, there has been scarcely any changes made in the treaty relations of these two great interests since almost the origin of the Government. Almost all our trade-treaties, as I understand, are based on the phrase of "the most favored nations;" and while such are the terms of our commercial treaties with Spain, and while it is true that we can carry American provisions or American manufactures into Spanish possessions on the same terms with any other power, yet, when the fact is that we are the only people producing corn and grain and bog products, that we do send to the Spanish American possessions, it is perfectly plain that that which is a tax on the trade of the most favored nations is practically an oppressive tax upon the trade of the United States. The Spanish tax in Cuba is 40 cents on the bushel on corn, which is, altogether, equivalent to the entire cost of transportation from Iowa to New York. The tax there is \$55 on an American horse, \$19 on a mule, \$8 on a barrel of flour, and $3\frac{1}{2}$ cents on lard. And it is plain that a tax of 80 per cent., which is the average upon the products almost exclusively marketed by Americans, is an excessive tax when contrasted with the American tax upon the products of Cuba. We, as I understand, only tax two of the principal products of Cuba. We admit her coffee duty free, and we impose a tax of something upward of two cents on sugar, and a tax of some 75 per cent. on tobacco manufactured and not manufactured.

Our schedule of duties, then, would not average 25 per cent. on her products, while hers averages on ours, certainly, 80 per cent. It seems to me as if the Government of the United States, the Senate, the diplomatic power, would or could, by any means, establish the same principle of reciprocity in regard to Cuba which has been so zealously sought to be re-established with Canada, there would be a draught of trade from the great interior West into the markets of gold and silver, of sugar and coffee, and that there would be a great gain to the people of the West in sending their trade in this direction, instead of being compelled to market it in Europe, and to import commodities received in exchange across the Atlantic Ocean. I confine myself, however, to say that the rate of Spanish duties in Cuba is not reciprocal with respect to our own.

When we get to Mexico we find that the rate of duties there is still more excessive. As a matter of course we cannot control the legislation of Mexico, but there should be an immense demand for American western products there. Yet, if an American commodity is landed at Vera Cruz, and pays all the charges, interest, Federal and State, municipal and railroad duties up to Mexico, your own consul has shown that the aggregate of this tax is 96 per cent. As one result the people of the United States send to ten millions of people within three and one-half days of this place but about 10 per cent. of the commerce which they receive. That commerce is supplied to a very great extent, so far as it exists at all, from other countries. It would seem, therefore, that the deepening of the mouth of the Mississippi would be of extreme value in regard to this particular trade; and so it would be by turning the Central American trade by steam-lines to this port, by bringing even the Australian freight here, by bringing the whole coast-trade of South Carolina, from Valparaiso up to Panama, in this direction. Those are causes, as it seems to me, for the improvement of this river. It does

not consist alone, although it is invaluable that it should be done, in marketing corn bought in England at such rates as that a farmer in Iowa, making four bushels, only gets one for himself; but if this corn could be turned into Cuba, with the duty of now 40 cents, there would be an immense demand, and it seems to me a legitimate demand, because it is on this continent.

It is not proper to say anything on the subject of continental commercial policy. But it seems to me that the improvement of the mouth of the Mississippi would be of extreme value in enabling us to exchange the commodities of the latitudes north for the productions of the tropics, and beyond the tropics. This would require the deepening of our river. That would authorize the establishment of steam-lines to all the ports on both sides, and there would be a concentration of trade on longitudinal line at this port which would be very valuable indeed to the Northwest, and which would give additional reason why the Government should make a permanent way of communication between the river and the ocean.

I confine myself, sir, to a very general sketch of these reciprocal relations between the two countries, because the committee will readily perceive, whatever force it may be entitled to, and because I do not wish, as there are so many other gentlemen and so many other subjects to occupy more of your time, to say more on this subject. If, however, there be any special questions which occur to any member of the committee, I will be glad to answer them if it is in my power. I only add these reasons as substantive to the great reasons for the improvement of the river, and especially by a canal which cannot be taken away and which never can be obstructed in the future, if it be practicable.

I am also selected to say a few words to you on the subject of emigration. I am in the habit of treating emigration as an element of commerce as far as New Orleans is concerned. It is extremely important to the Northwest to get emigrants on the best terms possible; and we claim that an emigrant can be put through on this route to any common point for less money than he can be brought from New York across. We claim that this Mississippi route to the West has many advantages in this respect; that its winter climate is much more mild, and that it has a winter harvest which employs the emigrants if they are disposed to remain until the weather is opened in the spring, when they can go anywhere to the Northwest in time to prepare for and cultivate the products of that country.

We claim, moreover, that it is a safer voyage for life from Liverpool to New Orleans than it is from Liverpool to northern ports; and upon the authority of Mr. Briggs, who is also selected for examination on this subject, I can state that the whole number of steam-vessels ever lost between New Orleans and Liverpool is six; one of which was lost in the Mersey, another on the coast of Ireland, a third on the coast of France, a fourth by a hurricane, one stranded in broad day on the reefs, last summer, and one lost off the mouth of the Mississippi; whilst we read, on the authority of Canadian documents, that there were last year sixty-nine vessels lost, in the grain and lumber trade, between Montreal and Liverpool. We contend that ours are calm seas, that the climate is mild, that navigation is liable only to the exceptional dangers of hurricanes; while north they encounter fogs, have an icy, rock-bound coast, and storms, and the dangers of the route to life are represented, as I say, by the loss of sixty-nine ships in one year against six vessels only lost here during the whole history of steam-navigation.

We think that the deepening of the mouth of the Mississippi River

so as to bring large vessels in would bring emigrants, and that the money from these emigrants would enable us to carry corn much cheaper from the West, because our vessels, as you will very readily see, come in ballast. We receive, perhaps, only \$1 back for \$5 that is sent out, and probably one ton comes back for every twenty-five we send out. Our vessels return in ballast, as I have said, and, as a matter of course, trading with this port, they must charge the expenses of the round voyage on the single voyage alone. Hence, we think it for the interests of the West to employ this as an emigrant route, since it is safer for life and cheaper for delivery. We do not aspire to hold the emigrant here any more than does New York City; but we wish to offer this as a winter-route to the West, and we wish the West to support the improvement of the mouth of the river, because it will bring emigration cheaper to them and safer, and it will be an additional encouragement for them to come to this country.

By the CHAIRMAN:

Question. How would the improvement of the mouth of the Mississippi increase the emigration?

Answer. It would have the effect of increasing the burden of ships, and, as a matter of course, make freights cheaper in and out. I think the estimate which I received from an experienced merchant in Buffalo was that to enlarge the capacity of ships to a hundred thousand bushels of grain would reduce the cost of freight by from 5 to 7 per cent.

Question. The point with me was this: Your ships come back in ballast now?

Answer. Yes, sir.

Question. Why do they not load with emigrants? I do not understand that.

Answer. I am aware, sir, that there are some subordinate difficulties. In the first place, New York has had heretofore superior facilities for the distribution of emigrants; but she undoubtedly has very far superior facilities to New Orleans in the protection of emigrants. It is not necessary for me to go over the system of protection; but the emigrant for that reason prefers going there naturally. And besides, he goes under contract with large landed corporations and individual land-holders in the Northwest who engaged him in Europe for transportation in that direction.

I do not know that it is an argument strictly legitimate to the improvement of the Mississippi River, and I have thrown it out more because I am in the presence of gentlemen called upon to reflect upon the subject. It is certainly one reason why the commerce by the mouth of the river between the West and Europe should be improved.

By Mr. WEST:

Question. Would not the fact of there being a greater draught of water at the mouth of the Mississippi naturally make it a greater resort for vessels and steamers from Europe?

Answer. That is very obvious.

Question. That being so, would not that necessarily induce a greater influx of emigration in that direction? Is not that your idea?

Answer. If I were to enlarge on the subject, the reasons I should assign why we have not emigration is because we have not addressed ourselves to it as a substantive element of import as they have elsewhere.

Question. But do you not mean that if we had more steamships, and

if they were habitually more in the habit of coming here, there would be naturally more emigration?

Answer. I find a difficulty in the question addressed me by the Chairman why they do not now come. But I still think if there was a greater trade between the West and Europe, that the West could import its emigrants on better terms by this route than they do by any other. I acknowledge the difficulty which the Chairman has suggested, and I will not go into any explanation of the causes, which are local to some extent.

By Mr. DAVIS:

Question. Is there some difficulty from here up the river?

Answer. None whatever. Our barge lines here will take a passenger on contract, with 300 pounds of measurement goods free, and carry him to Saint Louis for \$5, and be glad to get him.

Question. Will they take an emigrant and his baggage to Saint Louis for \$5?

Answer. Yes, sir; they will allow for 300 pounds of baggage on this route, while on the New York route they only allow for 150 pounds.

By the CHAIRMAN:

Question. I have supposed, in thinking over this subject myself, that the reason probably might be found in the irregularity of vessels.

Answer. That is it, sir.

By Mr. WEST:

Question. That is the drift of my question; that if they habitually came here there would be a greater emigration?

Answer. That is it, sir.

By the CHAIRMAN:

Question. What is the tonnage of the largest vessels which now come into your port?

Answer. I can say generally that we have vessels here from twenty-five hundred to three thousand tons. If you will allow me I will state, in regard to emigration, that my explanation is, we have heretofore endeavored to confine emigration to southern ports, and that the inducement is not as great to come to this port as it is to come to the region of country above here. We think it has been heretofore regarded by the Northwest as its interest to prefer northern routes to ours. What I am speaking of is with the emigration trade of the Northwest. We do not take five thousand emigrants now at this port. We take many of them for Texas, and very few for this State, while New York, as the committee is aware, takes more than three hundred thousand.

Question. You spoke of the safety of this route. I call your attention to a statement I have seen, although it has never been authoritatively corroborated, to the effect that in eleven years \$22,000,000 worth of shipping-property had been lost in passing around the Florida coast. What are the facts in that regard?

Answer. Mr. Briggs, one of our largest marine insurance officers, will respond upon that question. I will mention, however, that is a loss principally upon the coastwise trade, and that that has been almost taken from us by the cross-rail; so that we do not, in fact, need the coastwise trade as much as heretofore. The damage amounted before the war to about a million and a half of dollars annually for the loss, and I suppose it may be put at something of that sort now. But I am

confining myself entirely to the transatlantic trade, and I apprehend that there have been no such losses in passing Key West or the Florida reefs on the European voyage.

By Mr. DAVIS:

Question. Continuing the emigrant question a step further, what will be the cost further up the Mississippi? You have given us the point of Saint Louis, but the majority, perhaps, do not want to stop there. They want to go higher up, do they not?

Answer. I have not considered it necessary to go beyond Saint Louis, because that is the point of intersection, and is assumed as such, between the Mississippi route and the route by rail. It would cost an emigrant as much, whether coming by one route as the other, from that point of intersection. I may state that the barge lines here and at Saint Louis would take an emigrant from Bremen to Fort Benton without putting him ashore more than once or twice.

By the CHAIRMAN:

Question. Are these barges so constructed as to carry emigrants comfortably?

Answer. They are fitted with bunks, and I am authorized to say by the president of the barge line, Captain Ray, of Saint Louis, and another gentleman, that they were anxious to obtain emigrants and passengers to go up the river.

Examination of LEWIS J. HIGBY upon the subject of climatic influences on grain-shipments from New Orleans, and obstructions at the mouth of the Mississippi River.

Mr. HIGBY. Mr. Chairman, as much has been said about this climatic influence, I will remark that my experience at the North in handling grain, from 1844 to 1868, was the largest of any one handler in Milwaukee, I having charge of the Milwaukee and Saint Paul elevator, and all the grain that the company brought in, and my experience here since 1868 to the present time, during five years, has been that we can keep grain here longer in the elevator than I could in Milwaukee—that is in the summer time, I mean to say.

I also wish to say that grain spoils mostly during the germinating seasons, and that is during the month of May and June. During these months there are frequently very muggy spells. Sometimes, perhaps, there will not be more than one or two of them during the season, and sometimes there will be one a week. You have all experienced them, I presume, at the North, when the air is very warm and sultry. For instance, you are all aware, I suppose, of the situation of Milwaukee; and to show you how it operated, I will say that we had once come there from Ripon, which was eighty miles away, a train of about twenty cars, about 11 o'clock in the morning, out of one elevator at Ripon which had been taken in in the winter and had not been disturbed. This was in the month of June. It was inspected by the inspector as soon as the cars were opened as No. 1 wheat. When the grain came down to the elevator, at about 2 o'clock, they perceived something was the matter with it, and the inspector's attention was called to it. He looked over it, and said the grain had undergone a sweat since he inspected it, and he pronounced it rejected. The owner went to the chamber of commerce and made a report that it was wrong to defraud him, as he thought, out of 15 cents a bushel. They sent a committee immediately to examine it, and it was found to be spoiled. We stored the wheat in a separate

bin. He took it to another place and handled it over, and in two weeks from that time he brought it back again and put it in as No. 2 grain. That is only one instance out of many that I could show you so that you could understand how grain will spoil at certain hours and certain times, when it would last a long time under any other circumstances. When grain comes here from Saint Louis, it is generally six or seven days on the way. It is put on barges which are about 15 feet between the joints, and between the joints there are 5 feet of grain, usually on deck, and then the windows are open forward and aft, and there is a continual draught through. Now, when that corn leaves Saint Louis, unless it is in the winter time, when there is no danger, in the summer time when the warm weather continues, that draught passes through, and that grain is undergoing a drying process. When it gets here, it is in better order when it goes into the elevator or on board of a ship than it is in the spring of the year in Milwaukee or on the lake. We have stored grain here for four months during the summer time, and then the grain came out in very good order.

By the CHAIRMAN :

Question. Was that wheat or corn?

Answer. Both. We have never stored wheat here through the summer season; but we have stored it from the 1st of November, in the fall, until the next May, and then it went out in as good order as when it came in.

Question. Are your elevators constructed on the same principle as the Milwaukee elevators?

Answer. Precisely the same construction.

Question. What is the elevator capacity of New Orleans?

Answer. Seven hundred and fifty thousand bushels.

Question. You distribute grain from here, do you not, through the Southern States for consumption?

Answer. Everywhere it is necessary for it to go.

Question. That brought down the river by barges is stored in the elevator in the general way, and left there until distributed?

Answer. Yes, sir.

Question. Is the business conducted in the same way as it is in Milwaukee?

Answer. No, sir.

Question. What is the difference?

Answer. All grain that comes here comes in barges—of course, in large quantities, a barge bringing perhaps ten, twenty, thirty, forty, or fifty thousand bushels. That belongs to one party, and of course we store it by itself. It is not inspected here at all.

Question. You have no inspection of grain?

Answer. No, sir; we have an inspector, and can have it inspected whenever the parties desire it; but the parties do not desire it unless it is bought subject to such a man's inspection. Now, in northern parts, each car as it comes in, or each barge-load as it comes in, is inspected, and everybody has to abide by what the inspector says. Their elevators store all grain together. For instance, if a man brings in grain to-day, he may not sell that same grain until next summer. He gets a receipt for No. 1, No. 2, No. 3, or whatever he calls for, and draws the grain of that grade, while at the same time his grain may be then in Liverpool, or eaten up.

Question. Your mode of doing business is the same as New York?

Answer. Exactly. It is sold on sample.

Question. How long did you say you were engaged in the grain business in Milwaukee?

Answer. From 1844 to 1868.

Question. How long have you been engaged in it here?

Answer. Five years.

Question. And you say you find no more difficulty from damage to grain here than you did in Milwaukee?

Answer. I do not have so much difficulty. At the same time I wish to be understood that grain will spoil anywhere, no matter where it is, if it is put in in large quantities in the winter time and held until the germinating season. No grain will stand that in any place under some circumstances.

Question. Why do you consider it safer here than North?

Answer. It is for just these reasons that I speak of, that there are more of these humid hours. It is not all day that these hours occur at the North, nor is it so here. I have not known but two hours here within the past six months of that kind of what we call humid atmosphere. We have it up North more in the month of February. I recollect there once of losing twelve thousand bushels of corn in four days in the month of February. It was sold for 58 cents to a man, and he had taken part of it away, and backed out because it had changed grade. Those hours you all have experienced in the North or somewhere else—when there is seemingly no air, and the perspiration comes outside and stays on your skin.

Question. Have you been engaged in shipping wheat or corn to Europe from here?

Answer. Very little on my own account, because we intended to confine ourselves entirely to our elevator business. I did the same at the North, and it gave better satisfaction than for an elevator-man to dabble in shipments.

Question. If I remember, in glancing over this document, there is a statement that usually your cargoes go out part grain and part cotton, the cotton being placed on the grain. Is that true?

Answer. Yes, sir; and in answer to your other question, in 1871 I made a shipment in the hottest part of the summer, as a test, by steam and by sail. The steam-craft paid a profit of \$1,500; the sail-vessel, about a profit of \$700.

By Mr. WEST:

Question. Were they both shipped simultaneously?

Answer. One was shipped on the 1st of July, and I think the other about the 20th.

Question. What was the relative market value at the port of export at that time?

Answer. The value here was the same when it was shipped.

Question. What was the condition of the Liverpool market at the time of the different arrivals?

Answer. It was a little less.

Question. The sail was less?

Answer. Yes, sir; the sail was a little less, I think. It was 32s. for sail and 33s. 6d. for the steam.

Question. Do you attribute the fact that the cargo by the steamship brought 100 per cent. more than the other to the fact that the Liverpool market was so much lower on the occasion of its arrival?

Answer. Yes, sir; that caused the difference.

Question. It was not any objection either by sail or by steam?

Answer. Both cargoes were in perfect order.

By the CHAIRMAN:

Question. What is the usual time from here to Liverpool by steam?

Answer. About twenty days.

Question. And by sail?

Answer. From thirty-five to ninety days. For the past five years, 1868 or 1869, however, freights were from 10*d.* to 12*d.*, and in 1871, when this experiment was made, they were 10*d.*

By Mr. SHERMAN:

Question. Was that per bushel?

Answer. Yes, sir; 10*d.* per bushel of sixty pounds. Freights here are a little different from New York. Everything goes here on grain at sixty pounds, and at New York they make a difference in the number of pounds there is in a bushel. They take corn for a little less than they would wheat per bushel.

By Mr. DAVIS:

Question. Does the locality in which the grain is produced make any difference as to its going through a perspiration here? That is to say, will the extreme North and Missouri grain operate differently when it comes here as to perspiration or climatic difficulties?

Answer. Yes, sir.

Question. Explain that, if you please.

Answer. The farther north you go the more water there is in any grain, and the farther south you go the less. That is the reason why California wheat will go anywhere, over all the world, at any time, because there is no water in it; and, in fact, to grind it they have to throw water in to moisten, or mix it with northern wheat. California wheat, when you harvest it, sometimes lays out on the ground in the sheaf four months before it is thrashed; and that grain is the dryest of any in the world. Northern Texas, I have been told, produces grain almost like it. Corn, for instance, depends on the season that it is harvested. There is more moisture in corn than in wheat.

In 1848, and I think perhaps your chairman may recollect it, one of the first elevators was built at Chicago by Mr. Charles Reade. He put two men there, and they filled up the warehouse with some sixty thousand bushels of corn in the month of January, because they bought it very low. In the month of February it began to smoke, and they thought it was on fire. It smoked for thirty days, and the smoke all went out. There was no way of handling it then, because all the elevators were run by horse-power, and they had no facilities for handling it over. Consequently, that grain smoked itself out. That is, it commenced heating with the immense moisture there was in it, and after it got through smoking they found 4 feet on top on all the bins of corn totally black and spoiled. When that was thrown off the balance was found to be good grain, and that it would go anywhere at any season of the year; but it had lost 20 per cent. And all new corn will do that I know of, unless it is taken care of.

Question. State the effect on the two grains when it arrives here. I understand you to say that there was a difference in the effect that the climate had upon the northern and southern grain.

Answer. The one is dryer than the other. There is less moisture in it. If a cargo of corn comes from the northern part of Illinois down here early in the spring, there is more moisture in it than there is if it comes from there in the summer time, because that corn is in store in the winter, when it is frozen and full of ice, and stays there. Any time,

generally after the 1st of December, corn is frozen when it goes into the elevators up there, and it stays so until June. I have seen, in drawing out bins that had been all winter in that way, that the iron rods that went through the bins, when they were drawn out for, maybe a minute, would be white with frost. Then, of course, they would dry off and be wet. Now, that grain in that situation, unless it is handled and dried, will spoil very quickly. When such grain comes here, or it has got wet in barges leaking, in some shape, it has got to be dried. But grain that comes here usually don't need any more drying than it does north, for we see that corn shipped from Chicago in the spring—it is so nearly every year—a large part of it is sold in New York, as it was last season, for what they call steamer corn. It is quoted all the way through from May to September as steamer corn. That corn sold for 40 cents a bushel, while good corn sold at 65 cents. Now, somebody must have lost 24 cents a bushel.

Question. My question is to this point: There is a general impression in the country, whether well-founded or not is another question, that there are climatic difficulties here in the shipment of northern grain. You having had experience, can you state whether you have experienced any difficulty of that kind; and, if so, to what extent?

Answer. I have not experienced any at all; not so much, I mean to say, as I did North, because we have had to handle it less here than we did North. When grain is shipped from here, as in the North, we do not have any handling at all. For instance, if it comes here, and I hold it for twenty days before it is shipped, it will be shipped in as good condition as when it came in; and in the North there is scarcely ever a cargo held in store twenty days from March till the close of navigation, for the reason that I am going to state. It is brought in under inspection, and if a hundred thousand bushels comes in a day, for ten days, of course there are a million bushels there. Now, in that ten days they must begin to ship some to get the elevator clear. The first that comes in goes out. The elevator men have a responsibility to take care of this grain, and they must deliver the same grain that they take in. They are taking care of themselves, and if you call for grain to-day, that you have bought to-day, supposing it is fresh, you go to the elevator and you get what they choose to give you; for instance, grain that came in ten days ago.

Question. Still that is the system of elevating. That is not the effect of the climate on the grain?

Answer. That is what helps to take care of it, by keeping it moving.

Question. But that is just as liable to be at the one place as the other, and does not come to the question yet.

By Mr. WEST:

Question. We are now at the 27th of December. Ten thousand bushels of grain arriving to-day at Chicago must be put in the warehouse, must it not, as navigation to the New York port is closed?

Answer. Yes, sir.

Question. Ten thousand bushels of grain arriving to-day at Saint Louis can be transmitted to New Orleans at once?

Answer. Yes, sir.

Question. And take ship and go to Liverpool?

Answer. Yes, sir.

Question. It arrives there, say, the 1st of February?

Answer. Yes, sir.

Question. When can the ten thousand bushels of grain in Chicago be released?

Answer. By the middle of next April, perhaps.

Question. Having lain in the elevator up to the 1st of April, it will arrive, when shipped, say about the 15th of May, to Liverpool?

Answer. Yes, sir.

Question. What are the relative chances of condition as to the ten thousand bushels of grain sent from Saint Louis by this route and arriving at Liverpool on the 1st of February, and the grain arriving from Chicago by the 15th of May, as to the condition?

Answer. It will be better, because there is no frost in it when it starts, and when it gets to New York, on the canal, the frost is coming out, and, as I said before, in that warm place, of course under the roof of the barge it is shipped in, it has a tendency to sweat.

Question. Do you mean to say that the grain that would come from Saint Louis by the way of New Orleans, the probabilities are that it would arrive in better condition than the grain housed in Chicago all winter and sent by way of New York?

Answer. A great deal better.

Question. What do you base that on?

By Mr. DAVIS:

Question. That is not the point. You have supposed that one would come here and go off immediately, and the other would lie there all winter. But the point is this: treat them both alike, for the grain that comes to Chicago might the next day go on by rail. I want to know if the grain is treated exactly the same; whether there are climatic difficulties here that the North does not have to contend with, and if there are any, I want to know what they are?

Answer. You wish to know if one grain is treated the same at Saint Paul and goes right straight through?

Question. Yes; one going to New York to be shipped to England and the other here to go to England?

Answer. There would not be any difference. But whatever there would be would be here, because it is a little drier and a little warmer. If it was the same temperature there would not be any difference. It is brought here, however, in these barges, that serve as driers, all the way from Saint Louis.

Question. State whether grain shipped at Saint Paul is necessarily transferred at Saint Louis, or whether it comes here in the same conveyance in which it started from Saint Paul?

Answer. It can come in the same conveyance.

Question. What is the usual course that is pursued?

Answer. It is usual to change at Saint Louis, for the reason that small crafts have to come down the river, because there is but little water there over the rapids. Below Saint Louis there is more water, and a larger craft can take it, and consequently it is brought cheaper.

Question. What would the transfer from one boat to the other at Saint Louis cost?

Answer. A cent a bushel.

Question. What would be the cost here to transfer it from boat to vessel?

Answer. One cent a bushel.

Question. What is the freight to-day from Saint Paul to Saint Louis and from Saint Louis here? In other words, what would the freight be from the two points here?

Answer. To-day and for the past month there has been no transportation excepting by rail from Saint Paul to Saint Louis.

Question. Why not?

Answer. The river is frozen up. The Diamond Joe undertook to come down with his tow-boat and six barges, and he got frozen up about the 20th or 22d of last month.

Question. But when the route is open what is the usual freight?

Answer. The freight from Saint Paul to Saint Louis, I think, is 10 or 12 cents. When I was there in 1868, managing the elevator, they paid 10 cents and sometimes 11 cents.

Question. Do you speak now of per bushel?

Answer. Yes, sir; Captain Davidson, the largest shipper on the upper river, said if they were making 4 feet of water on the upper river, he would bring it down from Saint Paul here for 12 cents.

Question. What is the freight from Saint Louis here?

Answer. That varies from 7 to 14 cents a bushel.

Question. What is it now?

Answer. Now it is 25 cents a hundred, which makes 12 cents. When there is 8 feet of water from Saint Louis here, it is brought for 7 or 8 cents.

Question. What is the largest vessel which can now come to your port? How much water can she draw, taking the usual regular movement?

Answer. Do you mean up the river?

Question. I mean for clearing the port for Europe or elsewhere?

Answer. The largest vessel, I think, is about three thousand tons.

Question. How much water would she draw?

Answer. Twenty-six feet.

Question. Have you 26 feet of water here?

Answer. No, sir. Do you mean how much water they would draw if they were loaded?

Question. No, sir. I ask you how much water you have on your bar?

Answer. There is about 19 feet now, I think. It varies at different times from 18 to 19 feet. Sometimes it is down to 17 feet.

By Mr. CONOVER:

Question. At low tide?

Answer. Yes, sir.

By Mr. SHERMAN:

Question. Have you the only elevator here?

Answer. Yes, sir; there is only one elevator on shore. We have a floating elevator.

Question. When was that shore elevator built?

Answer. In 1868.

Question. Was that the first elevator in New Orleans?

Answer. Yes, sir; that was the first elevator built here.

Question. What was the mode of transferring grain before that elevator was erected?

Answer. Before that elevator was built they brought grain down in sacks from up the river, and landed it on the levee, and niggers took it and carried it into a warehouse, and carried it back afterward and put it aboard ship on their backs.

Question. What proportion of the grain is brought now in bulk and what proportion in sack?

Answer. Do you mean now ?

Question. Yes, sir.

Answer. There is about three times as much brought in sacks as there is in bulk.

Question. That brought in sacks does not go through your elevator, then ?

Answer. No, sir.

Question. That goes where ?

Answer. That is for home consumption.

Question. Is that in bulk for exportation ?

Answer. Yes, sir.

Question. How much do you charge for elevating ?

Answer. We charge for taking out of the barge and into the elevator, and weighing it and taking it back into the ship, with twenty days' storage, 2 cents a bushel. We charge in the floating elevator, to go alongside of a ship and take the barge along and take it out of the barge and weigh it and put it into the ship, 1 cent a bushel.

Question. Suppose it is less than twenty days in store ?

Answer. We charge just the same ; and if it is one day it is the same.

Question. Suppose it is over twenty days ?

Answer. Then it is half a cent for every ten days. These prices are the same as those at Chicago, Milwaukee, and Saint Louis.

Question. What is the longest time you have held wheat or corn in store ?

Answer. Four months.

Question. What months ?

Answer. The months of April, May, June, and July.

Question. You keep each shipment separate ?

Answer. Yes, sir ; we keep the identical corn separate.

Question. During what months is there the greatest heating ?

Answer. The greatest heating is in the months of May and June.

By the CHAIRMAN :

Question. Of both wheat and corn ?

Answer. Yes, sir ; it is during the germinating season.

By Mr. SHERMAN :

Question. What kind of wheat do you get here chiefly—fall or spring wheat ?

Answer. Spring-wheat.

Question. Are the vessels that carry off the corn and wheat brought up alongside of your warehouse ?

Answer. Yes, sir ; unless they are to be loaded off the floating elevator, and then we go wherever they are.

Question. And you load them directly from your warehouse into the vessel ?

Answer. Yes, sir ; the same as is done North.

Question. What cost is paid by the shipper to get that wheat transferred from the vessel which brings it here to the vessel which carries it away except what is paid to you ?

Answer. Nothing.

Question. Are there no port charges here of any kind ?

Answer. Not that the shipper pays.

Question. Who pays the port charges ?

Answer. The ship.

Question. Which ship—the exporting ship, the ship which goes abroad?

Answer. Yes, sir.

Question. That is included in the freight, however, I suppose?

Answer. I suppose they collect freight enough to pay that.

Question. What are these port charges in New Orleans paid by foreign or domestic vessels?

Answer. I am not so familiar with that as Captain Miller will be, and he can give you the details.

Question. How is your elevator tax—what is the valuation upon the elevator in proportion to its cost?

Answer. It is nothing like its cost.

Question. About how much? Is it one-half, one-fourth, four-fifths? State as near as you can. I do not single out your property, but I wish to get at the general average of the valuation of property in New Orleans to its cost or salable value.

Answer. I think as a general thing property is taxed here for more than it would sell at auction.

Question. What is the rate of taxation in New Orleans?

Answer. I think the municipal and State tax amounts to $5\frac{3}{4}$ per cent.

Question. What is the rate of interest in New Orleans?

Answer. I think it is 8 per cent.; that is, bank interest.

Question. Is that the legal rate or the current rate?

Answer. The legal rate.

A BYSTANDER. Our legal rate is 5 per cent.; that is conventional. Captain Higby does not use the conventional term.

Question. What charges are paid by the vessel which receives the wheat?

MR. HIGBY. We put it into the hold, and if they elect to have us “trim” it, we “trim” it for \$2.

Question. What is that?

Answer. Shoveling it away into the hold. We run the grain into the hold and of course it has to be shoveled away, and if they ask the elevator company to do that we do it for \$2 a thousand. The charge North is \$4 a thousand.

Question. Are there any other charges?

Answer. No others. One thing I wish to state about those charges to the ship. The State and the municipal authorities granted this elevator company the privilege which no other corporation or individuals have. They grant them the right to receive ships to load and unload into their warehouse free of any charge; so that a ship that comes from Liverpool to the elevator company's wharf and unloads, and loads up there and goes away, does not pay a cent to anybody.

Question. Are you the only warehouse company chartered here?

Answer. Yes, sir.

Question. Can any other be chartered under the terms of your agreement?

Answer. No, sir; I do not think that any others could get that same privilege.

Question. Have you a monopoly, then?

Answer. We have a monopoly of that part of the business; that is to say, we have a monopoly of that part of it which does not amount to anything. We never have had a vessel come to that elevator and unload and go away, with the exception of six ships, I think, in five years; but if a vessel comes there and unloads a load of sugar, or if she comes and takes a load of corn and goes away, she has been to some other city

wharf, and there they catch her; so that our arrangement does not amount to very much unless they come directly there to load and unload, for they have to pay the city.

Question. Is there anything in your contract or charter, or your arrangement with the city or State, to prevent any other capitalist from building a warehouse?

Answer. No, sir; anybody is free to come.

Question. Would they have the same advantages in all respects as you have?

Answer. They would probably, with that exception, and that exception is worth nothing to us.

Question. State that exception again.

Answer. We have the privilege granted us to take in ships and they are not to pay city wharfage while at our wharf. For instance, if you send a ship from England, or any other foreign port to our wharf to take in a load of our or anybody else's stuff, and she comes and has cargo in, she may unload that into our warehouse and take in cargo and go away and she pays nothing to the city, and they won't ask her for anything.

Question. Do the other transporters have wharves as you have?

Answer. No, sir; there is not another one in the city. The city owns the whole of the wharves up to our elevator and a little beyond that.

Question. Does the city rent those wharves?

Answer. No, sir. It was given, it seems, to the city, by some munificent gentleman here as a public property, and the city built these wharves, and the ships coming to them they tax them wharfage for that privilege.

Question. They do not rent them but levy a tax for the use of the wharves?

Answer. That is it.

Question. Do not individual firms or corporations own certain spaces on these wharves?

Answer. Not a foot.

Question. Is not that very unusual?

Answer. Yes, sir.

Question. Is there any other case in your knowledge of that kind?

Answer. I do not think there is in the United States.

Question. What was the origin of that?

Answer. It is of French origin. This man gave this property. I have been told that several millions have been sold between this and the levee to build on—that the city have sold these lots.

Question. Is there any difficulty, so far as you have heard or know, about the city selling parts of these wharves to different persons to create competition?

Answer. They cannot sell or lease.

Question. Why not?

Answer. Because it was given to them as a donation to the public for a free landing, as the donor presumed, I suppose.

Question. Could not the city lease the wharves to individuals?

Mr. WEST. Undoubtedly they could.

By the CHAIRMAN, (referring to document presented to the committee:)

Question. I notice in this report of the New Orleans Chamber of Commerce, Exhibit M and O, showing actual expense of transporting from Saint Louis to New Orleans by barges and by steamers. Did you procure these figures?

Answer. I did.

Question. From what were they taken?

Answer. The barge figures were taken from the Future City tow-boat, which has been built the past year, and their cost was put down by the agent of the Mississippi Transportation Company.

Question. Were they taken from the books of the tow-boat company?

Answer. Not from the books, but they were taken from the agent as he told me their cost, and this was made out in conformity with the request of yourself, which was made and sent on.

Question. You have no doubt of the accuracy of these figures, I suppose?

Answer. So far as I know, those are the exact amounts they pay for wages, cost of ships, interest, and expense.

By Mr. WEST:

Question. How did the wages compare in this estimate of yours with the wages that were represented to have been paid on the canals running through New York State?

Answer. The engineer's report of the canal-barge show that two engineers are put down as working for \$1.50 apiece, or \$3 a day.

Question. That is, \$3 for the two?

Answer. Yes, sir. Now, they pay here \$3 for one and \$5 for the other. That would be \$8.

Question. Do you believe that engineers can be obtained at \$1.50 a day to run boats at the North?

Answer. When I was in business in Cooperstown, N. Y., we used to pay there quite as high wages as we are paying here; and I do not know of any engineers that are working for any less than \$3 a day in the North; and more we pay \$5. I have always paid our head engineer \$5. Those are the figures that the agent gave me as compared with the figures on the canal-boat.

Question. Did he give these, using the same prices paid on the canal-boat or prices actually paid by themselves here?

Answer. These prices are actual prices paid here. The canal-boat prices were not half as much as these. For instance, a captain there was put down at \$2, and here it is \$5. Then their men were put down at \$1 a day, and here \$1.50. The cook was put down at 75 cents, and here it is \$1.50.

Question. Do you know where they get their coal so cheap?

Answer. Yes, sir; from Saint Louis, or just below there. They tow it down with their coal-barges right from the mines.

Question. How are the facts with reference to the John F. Toll, on page 34, obtained?

Answer. I obtained them in the same way, from their agent here of the steamer.

Question. Is she one of the largest steamers?

Answer. No, sir; she is a freight-steamer.

Question. That estimate was made upon a full load, of course?

Answer. It was made upon her full tonnage—just what she carried.

Question. Based on the actual amount carried and the actual cost paid?

Answer. Precisely. The obstruction at the mouth of the Mississippi is caused by these bars. In their natural state they are 14 feet, while the natural bars of Chicago and Milwaukee were 7 feet only when I first went there. When they were 7 feet up there the freights were three times as much as they are now when they have 12½ feet. I be-

lieve there is the same within two or three inches on the Saint Clair flats. Now, at 14 feet, the ships that come here used to come here loaded with cotton, and they got along very well.

Examination of Capt. ALBION K. MILLER, agent for the State Line Steamship Company. Examined upon the subject of ocean tonnage and the condition in which grain shipped from New Orleans arrives in Liverpool.

By Mr. WEST:

Question. How many ships does your line consist of?

Answer. Of six ships altogether. We have three running to this port. The average tonnage is 2,500 tons. They run to Liverpool and Bordeaux.

Question. How long have they been running?

Answer. About eighteen months.

By Mr. DAVIS:

Question. Where is your line owned?

Answer. In Scotland and Great Britain, principally. There is very little of the stock taken here. During my experience in business we have shipped here, on our ships, about 220,000 bushels of corn, and have never, in any instance, heard any complaint of any damage whatever. But, on the contrary, it has landed in as fine condition as when it was shipped.

Question. When you say corn, do you mean corn, strictly speaking?

Answer. Yes, sir; corn—Indian corn.

Question. No wheat?

Answer. We have shipped no wheat as yet; though I have in my capacity as a ship-master, previous to the war, carried wheat from here to England; but we have not shipped any upon our lines since starting.

By Mr. WEST:

Question. Did it ever appear to be prejudiced particularly by the voyage?

Answer. No, sir; I had experience as a merchant in Liverpool for some three years. We had a number of ships consigned to us from San Francisco. Some of them were one hundred and sixty and one hundred and seventy days at sea, with full cargoes of wheat. I have never known an instance of any damage, although passing through two tropical and two frigid climates during that passage.

By Mr. SHERMAN:

Question. Is grain shipped by you in bulk in your vessels?

Answer. Yes, sir.

Question. What care do you take to give it air?

Answer. We have the ordinary ship's ventilators. Perhaps there are three or four ventilators. They are about from one to two feet in diameter through the decks, and they project above the decks five or six feet, and sometimes higher if they go through the midship section.

Question. Do you aid your ventilators by steam-power in any way?

Answer. No, sir.

Question. Just by the motion of the vessel?

Answer. Yes, sir; it passes down just forward and goes aft, or *vice versa*. It depends on the wind at sea.

Question. Do you store your grain in sections or in one bulk?

Answer. Generally in two sections entirely. We divide it nearly

equally forward and aft. These steamers have water-tight compartments. We make 25,000 or 30,000 bushels in one portion of the ship and an equal quantity in the other. We generally distribute the weight in loading.

Question. But this distribution is not to aid ventilation, but simply for convenience in loading the vessel?

Answer. Yes, sir.

Question. And for safety?

Answer. Yes, sir.

Question. What is the depth of corn on your vessel when it is loaded?

Answer. It depends on the quantity. Our ships are about 24 or 25 feet hold; if we load up to the second deck that would be about 17 or 18 feet. On the lower hold it would be about 10 or 12 feet, perhaps, in depth.

Question. The whole decks are divided clear through with stories or holds?

Answer. Yes, sir; our steamers are double-decked. There are in some instances three decks, or partly three decks.

By Mr. DAVIS:

Question. Do you receipt for grain when you receive it here to be delivered in condition, or what is your custom in that regard?

Answer. Do you mean as to the terms of shipment?

Question. Yes, sir.

Answer. We agree to deliver it in like good order and condition that we receive it by the terms of the bill of lading. We are bound to do so, or else we are subject to damage in case of losses.

Question. What proportion, if any, of grain do you have offered to you that you cannot receive on account of condition?

Answer. I have never heard of any instance of that kind.

Question. You have never refused any grain owing to its condition?

Answer. No, sir; I never had occasion to.

Question. Do your ships come to the wharves here or do you have to lay below and lighter down?

Answer. They come right to the wharves.

Question. How much water do they draw on an average?

Answer. On an average about 18 feet. Sometimes we are obliged to load to 16½ or 17 feet, owing to the condition of the bar. We govern ourselves by that. We could load them to 21 or 22 feet provided we had water.

Question. Would it be more profitable to you?

Answer. Very much so. We are obliged to come back half-loaded sometimes. Our cargoes from the other side are all heavy cargoes. Consequently we cannot take as much as the ships can carry. We can only load to a certain draught; otherwise we should incur the expense of lighting her. I have in several instances been obliged to lighter a cargo of iron at the bar.

Question. Would it enable you to ship grain from here to Liverpool, or bring tonnage back at a less cost to the owners if the bar was 25 feet, say?

Answer. The cost of a sailing-ship would be the same; but her freights would be more remunerative if we were enabled to load. It costs the same to sail the ship in ballast as with a cargo.

Question. I understand that; but my question is whether the freights would, in point of fact, if you had, say, 25 feet of water, be less between the two points than they are now.

Answer. Yes, sir; freight would be less from the fact that we could depend on having the back freight to help us out on the voyage. If we had full cargoes back we would be willing to take our outward cargoes at a less rate.

Question. What per cent. do you estimate that would be?

Answer. Of what do you mean?

Question. In saving in freight.

Answer. We estimate that it would be fully 25 or 30 per cent. We would be able to carry freight that much less if we had a sufficient depth of water.

Question. Would 25 feet be sufficient?

Answer. Hardly.

Question. What would be the best depth?

Answer. We ought to have at least 27 or 28 feet. We have steamers coming here which, if loaded to their full capacity, would draw fully 25 feet.

By Mr. WEST:

Question. To make this port one of universal instead of exceptional resort, do you consider it desirable to increase the draught of water at the bar?

Answer. Most assuredly I do.

Question. Do you think the ship-building interests of the world, in constructing vessels, would more likely construct them on an average of greater draught of water than would be admissible in the present condition of the bar if this improvement was carried out?

Answer. Yes, sir; I know we would do it in our case, and I know it applies to all other ship-owners. We are obliged now to build ships at a certain draught; and then at that we are not able to load at the full capacity. It costs no more, comparatively, to sail a steamer of 2,500 or 2,600 tons than it does to sail one of 2,000 tons. We have a case in point in our own line of ships. One of our ships is 600 tons larger than the others. We sail her with the same number of men. That makes the same amount of wages and provisions. There is no difference in the sailing of that vessel except some four or five tons of coal.

Question. Do you know anything about the disaster to the steamship Memphis, here, last summer?

Answer. I have some knowledge of that. But Captain Weeks, who is the agent of the ship, is present.

Question. Are you familiar with the port charges here?

Answer. Yes, sir.

Question. Are you familiar with the port charges in the city of New York?

Answer. Comparatively. I am not fully familiar with the steam-port charges, but I have a memorandum from there lately which shows me that the charges are really in favor of New Orleans.

Question. That is, a steamship coming to this port to load is not subjected to quite as much port charge as she would in going to New York?

Answer. That is it, sir.

Question. There is an impression abroad that the port charges here amount to an embargo to the vessel coming here. What is the nature of that charge?

Answer. That applies more to sailing-vessels than to steamers, owing to the towing charges, which we generally avoid.

Question. Then if you have a great draught of water that will make

this port one of universal resort to steamships, they will have no complaint to make on account of port charges?

Answer. No sir; I think not. Our wharfage dues are tolerably reasonable. Our principal charges here for a steamer is wharfage dues; pilotage and other charges are merely nominal—quarantine-fees, harbor-masters, &c.

Question. Are the wharfage dues less here than in New York?

Answer. Yes, sir; I think they are, and pilotage is less.

By Mr. SHERMAN:

Question. What are the names of your vessels?

Answer. The Louisiana, the Minnesota, and the Alabama.

Question. Which is the medium vessel?

Answer. The Minnesota.

Question. What charges do you pay to any one in Louisiana or New Orleans, from the time you enter the outer port till the time you land here?

Answer. That depends a great deal on the nature of the cargo we take. If we take an entire cargo of cotton the charges are a great deal more.

Question. Take the cargo of cotton, I suppose as you approach the outer bar you then have to take a pilot on board?

Answer. Yes, sir.

Question. How much pilotage do you pay from that point to New Orleans?

Answer. Pilotage from that point comes on an average to about \$110 or \$120.

Question. Does the amount of charge depend on the tonnage of the vessel?

Answer. No, sir.

Question. Upon what?

Answer. With sailing-vessels it is so much a foot. With steamers we have an arrangement to pay a certain sum without regard to her draught.

Question. Is that a special arrangement?

Answer. Yes, sir, it is; without regard to her tonnage.

Question. Are you able to tell us what would be the charges upon a ship of 1,000 or 1,500 tons?

Answer. It would depend upon her draught.

Question. Then there are uncertain conditions in regard to that?

Answer. Yes, sir.

Question. What is the average pilotage on a ship under sail?

Answer. On a ship drawing 18 feet I think it is about \$3.50 a foot, or \$4, up to 16 feet, or about that. I have not the exact figures in my mind.

Question. How much would that be on the vessel?

Answer. Do you mean on the whole vessel?

Question. Yes, sir.

Answer. Say, at \$4 a foot, and she drew 20 feet, that would be \$80.

Question. It is upon the draught of water?

Answer. Yes, sir.

Question. You have to pay a hundred and some odd dollars for pilotage. What other charges have you to pay?

Answer. There are the wharfage dues.

Question. Do you pay anything except the pilotage when you arrive at the port?

Answer. Nothing except the quarantine charge during the season. The wharfage charge is 20 cents per registered ton.

Question. How much is the tonnage of your vessel, the Minnesota?

Answer. About two thousand tons.

Question. That would be \$400?

Answer. Yes, sir.

Question. How long do you lie at the wharf?

Answer. We are allowed to lie sixty days on that charge.

Question. What is the ordinary length of your stay?

Answer. We are seldom here over seven or eight days; sometimes ten days; but on average eight days.

Question. To whom is that charge paid?

Answer. To the city. The city owns the wharves.

Question. What other charges do you have to pay?

Answer. There are no other charges excepting what are nominal, such as harbor-masters' or warden fees. Those we incur in other ports. Our principal charges are compressing cotton and the expense of stowing to stevedores. The charges on grain are very reasonable, being two or three dollars on the thousand bushels.

Question. Do you pay any tax to the city or State on a vessel arriving in that way?

Answer. We pay a yearly tonnage-due of 30 cents a ton every twelve months. That is the tonnage-tax of the United States.

Question. And that applies, of course, to all ports?

Answer. Yes, sir.

Question. There is no special tax paid to the State of Louisiana or the city of New Orleans?

Answer. No, sir.

Question. As to the men who load her, the stevedores, do you pay a fixed rate?

Answer. It is a fixed rate according to the nature of the goods; so much a bail, so much for a bushel, or so much a barrel.

Question. Is that fixed by law or only by custom?

Answer. It is governed by the same rules which govern labor.

Question. By competition?

Answer. Yes, sir.

Question. Is there any competition in that kind of goods or is there an organization which controls it?

Answer. There is quite a competition in that kind of business.

Question. Is there any organization of these stevedores which fixes the price?

Answer. There is no organization among the employers. There is an organization existing among the employes as applying to cotton, and, in some instances, to daily labor.

Question. Are the rates above the pay of ordinary common labor?

Answer. Yes, sir; for cotton, but not for corn.

Question. How much do you pay a day for cotton?

Answer. The laboring screwmen get about \$6 a day.

Question. Is that compressed after it goes on ship-board?

Answer. No, sir; it is compressed before. They use jack-screws for squeezing it into the ships to economize all the space possible.

Question. Any other power?

Answer. The common jack-screw.

Question. What power do they use for compressing it for the ship?

Answer. Steam-power.

Question. That is done in this process?

Answer. Yes, sir.

Question. What other charges are paid by you? What I wish to get at is the entire expense of the local charges.

Answer. Do you mean average expenses on the steamer?

Question. Yes, sir; and if there are extraordinary expenses, what are their nature?

Answer. There is nothing beyond that unless we incur lighterage and sometimes towage at the bar. If we stick on the bar I have paid as high as \$3,000 on one ship.

Question. Do you know the expenses of towing an ordinary ship from the outer bar to New Orleans; say a ship of about a thousand tons?

Answer. One of the agents of the tow-boat company is present, and I think he can give you those points better than I can.

Question. Is the business in which you are engaged a growing business?

Answer. Yes, sir.

Question. Do you think you can compete with the New York market in transporting?

Answer. We can undoubtedly if we have the water. That is the grand drawback at present.

Question. You mean the water at the outer bar?

Answer. Yes, sir. We are very often offered a full cargo of corn when we cannot take more than half a cargo for fear of the water.

Question. Will the construction of the proposed Fort Saint Philip Canal meet the demand of your trade?

Answer. Yes, sir; providing we can get 27 or 28 feet of water.

Question. What percentage would it increase the capacity of vessels like yours?

Answer. We should build ships of 3,000 tons instead of 2,000 tons or 2,500 tons, providing we were sure of plenty of water.

Question. What are your present charges for transporting corn to Liverpool?

Answer. The cost of freight from here is something like New York. It is governed by demand and supply, and is very fluctuating. On an average, since I have been here, it has been from 9d. to 10d. Sometimes it is 12d. or 14d., and sometimes only 7d. or 8d.

Question. At what rate could you transport corn from New Orleans to Liverpool, with the power of entering the channel through a canal drawing 25 or 27 feet, and relieved from the present system of trouble on the bar, &c., and with the steady business likely to be produced by building that canal?

Answer. From 8d. to 10d., providing we had facilities for loading as deep as we require. It would pay us very well. But we have to make about the same preparation in the time used to prepare for 50,000 bushels as we would for 70,000 or 80,000.

Question. Are you troubled here with the warehousing system?

Answer. No, sir; most of our corn goes from floating elevators. A barge comes alongside of a ship, and it is put in by a floating elevator.

Question. Don't you have difficulty in waiting and being detained here for a load?

Answer. No, sir; not as a rule. We are generally engaged previous to the arrival of the ship; so that it is on hand here for her when she arrives.

Question. The barges are brought down with a view to meet your regular trips?

Answer. Yes, sir.

Question. Have you ever had any difficulty in transferring the corn from the barges to the ship?

Answer. Not the slightest.

Question. I mean as to the condition of the grain in the barges.

Answer. No, sir; I have never had any difficulty whatever.

Question. Have you ever detected any bad grain or imperfect grain?

Answer. No, sir.

Question. Have you ever had any reclamation made upon you for injury or damage to corn?

Answer. None whatever.

By Mr. WEST:

Question. How would you load the Minnesota to most advantage if you were to send her from here with cotton and corn?

Answer. Do you mean at the present draught of water?

Question. Yes, sir.

Answer. I should not be able to take more than 25,000 bushels of corn.

Question. How much cotton?

Answer. The balance of cotton—about 2,000 bales.

Question. Supposing you had that ship in New York, and would load her there with a similar cargo, irrespective of draught of water, would it cost you any more to put that grain on board here and to put the cotton aboard here for your stevedores' charges than it would in New York?

Answer. No, sir; no more.

Question. Would it cost you any less?

Answer. I think the grain charges are even a little higher at New York. I am not quite sure about that point.

Question. And the cotton charges?

Answer. They are about the same.

A BYSTANDER. Four dollars a thousand bushels is charged on grain in New York.

THE WITNESS. That is \$2.50 more than the charges here.

By Mr. WEST:

Question. As affecting the common idea that the port charges of New Orleans are exorbitant and in excess of New York, you are of the opinion that, if anything, the difference is a little in favor of New Orleans, on steamships?

Answer. Yes, sir; I think so.

Question. It has been proposed by Federal legislation to put the channel at the mouth of the Mississippi, which was in course of excavation, under the charge of the Secretary of War, so that he might control the movements of commerce, the incoming and the outgoing of steamers, with a view of preventing interruptions that have been alleged as against the tow-boat interests. Have you any opinion in regard to that as to how it would affect your interest, or whether it would be beneficial or prejudicial to the interests of commerce?

Answer. I think that some head at that bar to prevent blockading would be beneficial. The trouble has been, heretofore, with masters of steamers and ships, when there was a bad bar and the ships which were outside wished to come in, and those inside wished to get out, would insist upon having their ships put on the bar with the object of endeavoring to get over it at improper and imprudent times, thereby causing the matter to become worse. There has been a lack of control in that respect. It seems to me that anything to remedy that evil

would be a benefit. I, for one, would be willing to await my turn there to get a chance to get out.

Question. Through such imprudences has there been any serious loss to commerce?

Answer. There has been a great loss to ship-owners and shippers by ships being detained through these blockades.

Question. Then, do you believe that if some one authority was competent to dictate the movements of vessels at that time, if that authority was properly exercised, it would be to the benefit of commerce?

Answer. I do.

By Mr. SHERMAN:

Question. Will there be any practical difficulty in loading your vessels in the Mississippi River, inside the Fort Saint Philip Canal, without going to New Orleans?

Answer. It could be loaded at the canal itself by elevators, or by railway communication from the city even.

Question. Then, if the charges at New Orleans should be too high, there would be no difficulty in establishing a competition anywhere between the Fort Saint Philip Canal and New Orleans?

Answer. Not any.

Question. That would be effected, then, in case of any unreasonable charges?

Answer. Yes, sir. The proposition is, I believe, in case the canal is completed, to put wharves or jetties at each side, and a ship could lay there or in the canal itself, provided that there was width enough; and she could take in full cargoes from the barges, because there would be no more trouble to tow the barges down there than to leave them at this point.

Question. But there would still be an inducement to come to New Orleans for the return cargo, as a matter of course?

Answer. O, yes; of course.

Question. But there would be no difficulty in evading port charges or wharfage, or anything of that kind, by taking your load for export there?

Answer. A full cargo of corn could be taken there from barges, and avoid these levee dues in this city.

By Mr. DAVIS:

Question. You spoke a moment ago of probably four hundred dollars being the charge for a vessel here at the wharf. Does it make a difference whether she is loaded or not?

Answer. She is paid for by the registered tonnage.

Question. Empty or loaded she has to pay that?

Answer. Yes, sir.

Question. You spoke of coal. What fuel do you use?

Answer. Coal.

Question. From where?

Answer. In some instances we bring a surplus from England, of the Welsh coal; but more often we obtain for the homeward voyage the Pittsburgh coal.

Question. What does that cost you per ton?

Answer. About \$7 or \$8.

Question. On board?

Answer. Yes, sir; delivered on board.

Question. How does it compare in quality with the Welsh coal which you bring from England?

Answer. We find very little difference. The Welsh coal makes a little better steam. This makes very good steam, this coal from Pittsburgh.

Question. What is the relative expense or cost of the two coals?

Answer. At present coals are a little cheaper here than in England. The colliers there have been on a strike for several months, which has increased the price of coal very much. When our steamers first started we could get coals for 10s. and 11s. per ton; now it costs 26s. or 27s.

Question. How long has that advance been in operation?

Answer. For the last twelve months coal has been growing high in England.

Question. Is coal on the advance or decrease?

Answer. I think it has reached its highest point at present. The last advices from there show a prospect that labor matters would be regulated in such a manner that coal would become cheaper in England than at present.

Question. How many tons does it require for the passage of your ordinary vessels?

Answer. We burn on the voyage about 17 or 18 tons per day. Our average passage from here is about eighteen days.

Question. Have you used any other of our coals than the Pittsburgh coals?

Answer. No, sir.

Question. Did you formerly bring coal enough from the other side to carry you back, or did you always have to take on some here necessarily?

Answer. We always take on more or less here.

Question. You take more now than you formerly did?

Answer. Yes, sir; or perhaps the same. There is a very little difference. In the present instance we have brought out very nearly enough to return with.

Question. I understand you your line consisted of six ships, but you have but three on hand now?

Answer. We have three. The others are in process of construction.

By Mr. WEST:

Question. Assuming that this canal could be constructed in a very brief period, what, in your opinion, would be the effect toward stimulating the construction of steamships to come to this port?

Answer. I think that we would soon have double the number of ships in the trade that we now have. There are a great many ships that go under the head of transient ships which are steamers; that is, they are seeking business anywhere, and are not confined to any particular line, but they are debarred from coming here on account of their draught.

Question. This is an exceptional now instead of a universal port, owing to its draught of water?

Answer. Yes, sir.

Question. Have you any idea of the total aggregate value in dollars of the steamships now plying to this port?

Answer. I never have made an estimate on them. We have about 40,000 tons foreign tonnage.

Question. Steam-tonnage?

Answer. Yes, sir; plying here now.

Question. How much per ton do you suppose that costs?

Answer. That might be estimated, I suppose, at about £20 per ton.

Question. That is \$4,000,000?

Answer. Yes, sir. The cost of building steamships is much higher now.

Question. Then, if this canal was built, it would double the capital employed in this trade?

Answer. Yes, sir; I think we would have treble the amount of grain coming in this direction, providing we had sufficient steam-tonnage. At present they do not like to ship any more grain unless they are sure of instant means of transportation. They do not like to have their grain lay here.

Question. Then double the amount of capital would be invested, in your opinion, and treble the amount of grain would come here?

Answer. Yes, sir.

Examination of Capt. SILAS WEEKS, representing the Mississippi and Dominion Steamship Company.

By Mr. WEST:

Question. What is your business?

Answer. I am agent for the Mississippi and Dominion Steamship Company.

Question. Where does that line run?

Answer. To Liverpool.

Question. Where is it owned?

Answer. Principally in Liverpool and Montreal, and somewhat here in New Orleans.

Question. What are the number of steamships in your line?

Answer. We have seven. They are not all in this employ; but we have seven in this and the Montreal trade.

Question. How many run to this point?

Answer. Four.

Question. What size are they?

Answer. From 3,100 tons to 2,000 tons. We have a new ship coming here between 3,100 and 3,200 tons.

Question. Have you heard the testimony given by Captain Miller?

Answer. I have.

Question. How far does it coincide with your own experience?

Answer. My experience and opinion is about the same as Captain Miller's, with the exception that I think if we had deep water at the mouth of the Mississippi River, instead of having double the quantity of grain we would have treble, and even more. In fact, I think if we had water here it would be the largest port in the country for steamship operations.

Question. What is the draught of water of a 3,100-ton vessel?

Answer. About 24 feet.

Question. I thought you said you had one running here of 3,100 tons.

Answer. No, sir; we have one coming. We have a new one coming, named the Dominion, of between 3,100 and 3,200 tons.

Question. About how much would she draw?

Answer. About 24 feet, loaded deep.

Question. How do you propose to operate her here?

Answer. She would draw here 24 feet, if we loaded her to her full draught.

Question. Would it not be of most advantage to load her to her full draught?

Answer. It would.

Question. You will not be able to load her to over what?

Answer. Eighteen feet at the present time.

Question. What percentage of loss would there be in her operations from that fact?

Answer. I should think about 30 per cent.

Question. Was the Memphis in your line?

Answer. Yes, sir.

Question. Are you acquainted with the circumstances in relation to her?

Answer. Yes, sir.

Question. What month did she go ashore?

Answer. In May.

Question. Eighteen hundred and seventy-two?

Answer. Yes, sir; last May.

Question. How many bushels of grain did she have?

Answer. Fifty thousand bushels.

Question. How long did she lie in the bar?

Answer. Thirty-one days.

Question. Was she obliged to return here and unload?

Answer. Yes, sir; on account of breaking her propeller.

Question. What was the condition of the grain when it went aboard of her?

Answer. It was good.

Question. What was it when it was taken out for reloading?

Answer. Equally as good.

Question. Have you any idea of the temperature down there?

Answer. Yes, sir; it was very hot, and she was lying broadside to the sun across the bar. Sometimes it would be almost impossible to put your hand on to the iron, it would be so hot, even inside, in the hold.

Question. Under ordinary circumstances, and without such a detention, is there ordinarily likely to be a more trying ordeal than that against grain by climatic influence?

Answer. No, sir; I don't think there is.

Question. If she went through that furnace, seven times heated, almost any other cargo would ordinarily go through?

Answer. I think so; yes, sir.

Question. Have you any experience about the port-charges in New York?

Answer. Yes, sir; somewhat. I have been there a number of times as a ship-master.

Question. And your views with reference to the comparison between this and that port correspond with those of Captain Miller?

Answer. They do. In fact, I think many charges in New York are heavier than they are here, with the exceptions of compressing, and the stevedore's bill, which we have to pay here, and that they do not have there. But of course compressing is for our own benefit.

Question. Is cotton shipped from New York compressed?

Answer. Yes, sir; it goes from here and goes from the West compressed.

Question. Goes from the West compressed?

Answer. It goes from the interior towns through by rail, and goes from here by steam, compressed, and is reshipped there.

Question. In case the control of the pass, under excavation at the present time, was confided to any competent authority, would that be bene-

ficial to commerce; I mean with reference to the movements of vessels to and fro?

Answer. I think it might in a measure. But still, ships coming in, perhaps, and outside, if they had to wait until they got permission to come in, might cause them a long detention. It would be a benefit so far as deep-water vessels are concerned, but not for light-draught vessels. If a light-draught vessel wanted to sail in, I don't think it would be to her advantage to lay-to outside until she got permission to come in.

Question. What I mean is, that if some authority had complete control of the movement of vessels in and out of this pass during the process of excavation, would it be better to confide it to such authority than to leave the vessels entirely to their own option when to come in and when to go out?

Answer. It would be better to confide it to some one authority.

By Judge KENNARD:

Question. Do you or not know that unnecessary obstructions have occurred to the exit and inlet of vessels, from the fact that there has been a collision between the Tow-Boat Association and the United States officer in charge?

Answer. Yes, sir.

By Mr. SHERMAN:

Question. What efforts do you make to secure ventilation in your holds?

Answer. All of our steamers are well ventilated. The ventilators, most of them, are round and about two feet in diameter. Our ventilators are obliged to be six feet from the deck.

Question. How large a bulk do you put this grain in?

Answer. If we take it in what we call the second deck, we have it in eight different compartments. In our lower hold forward we have water-tight compartments; iron bulk-heads. We do not let the grain come forward. It goes a little beyond the foremast. Then we have shifting boards or planks running up and down the middle to keep the grain from shifting.

Question. But you have no circulation of air in between these compartments?

Answer. There is a space that wide, (five or six inches,) but it is generally filled with grain.

Question. What do you load in the fore-part of your vessel?

Answer. Cotton.

Question. What is the largest bulk of grain and corn you can carry in your vessel?

Answer. We took 53,000 bushels once.

Question. What is the largest single bulk?

Answer. Ten thousand bushels. That would be one-half of the ship out to the bilge.

Question. You never had any trouble about that?

Answer. No, sir.

Question. Have you ever had any reclamation made upon you for damages?

Answer. Never, sir.

Question. How long have you been in the business?

Answer. I have been a little over a year here as agent; but I commanded one of the steamers before I took the agency.

Question. Are you familiar with the carrying of grain in sailing-vessels?

Answer. No, sir, not in bulk; I have carried it in sacks.

Question. What is the length of your voyage?

Answer. From twelve to twenty days. One of our vessels made it in sixteen days and twenty hours.

Question. That is from New Orleans to Liverpool?

Answer. Yes, sir.

Question. What freight do you get?

Answer. From 8*d.* to 14*d.* I have carried it at both rates, and I have had 16*d.*

Question. Sixteen to thirty cents a bushel?

Answer. Yes, sir.

Question. What is the distance?

Answer. About four thousand eight hundred miles.

Question. What is the ordinary freight between New York and Liverpool?

Answer. I think it averages from 6*d.* to 10*d.*, and 12*d.* It has been as high as 15*d.* this year.

Question. It is, then, generally about two-thirds as much as here?

Answer. I think it is nearly as much as ours. I think there is but very little difference.

Question. How can you go so much greater distance? It is almost double the distance.

Answer. I do not know, sir. We bring passengers here for the same as they take them to New York. In fact, our return freights are the same from Liverpool. We do not get quite as much a ton from Liverpool here as they do.

By Mr. WEST:

Question. Freight is cheaper from Liverpool to New Orleans than from Liverpool to New York?

Answer. O, I don't know that it is, generally, but it is so this year.

By Mr. SHERMAN:

Question. What do you carry from Liverpool here?

Answer. A general cargo.

Question. Of what, principally?

Answer. Iron, hardware, crockery ware, machinery, &c.

Question. Is your load back from Liverpool here as large as the load out?

Answer. We have a much larger tonnage from here to Liverpool.

Question. Your tonnage eastward-bound is heavier than westward-bound?

Answer. Yes, sir.

By the CHAIRMAN:

Question. About what proportion would it bear?

Answer. About one-half as much coming this way as going that way.

Question. Do you ever put cotton on top of wheat?

Answer. Not on top of wheat. We have a deck between.

Question. I have seen some statements from Liverpool that corn was sometimes damaged coming from here on account of the way in which it was shipped.

Answer. It is not so on our steamers. We have never put cotton on top of corn. There is always a deck between.

By Mr. SHERMAN:

Question. Would not there be danger of heating and setting on fire the cotton, possibly?

Answer. Yes, sir; but we never have had any complaint.

By Mr. WEST:

Question. How long have you been a sea-faring man?

Answer. About thirty years. I commanded a ship twenty-four years.

Question. With reference to the dangers of navigation as between Liverpool and New York and Liverpool and New Orleans, where do you consider is the greater or lesser risk?

Answer. Taking the year through, I think there is greater danger in the New York trade; that is, considering the heavy weather that the New York ships would get which the ships coming this way would escape.

Question. What has been the experience in respect to that in the last twelve months or two years? Have there been more ships lost between New York and Liverpool with reference to the number than there has been lost between Liverpool and New Orleans?

Answer. I think so; and I think two to one.

Question. Then, if you were an underwriter, which risk would you prefer at the same rate?

Answer. In the summer season I should prefer New York, but in the winter season I should prefer New Orleans.

Question. The year round which would you prefer?

Answer. I should prefer New Orleans.

By Mr. CONOVER:

Question. Would you prefer to pass the Florida reefs in winter.

Answer. Yes, sir.

By the CHAIRMAN:

Question. Which do you regard as the most dangerous passage from here to Liverpool?

Answer. Coming up Florida; up the Gulf—the coast of Florida.

Question. Have you ever thought anything of the proposed ship-canal from here to the eastern coast of Florida with reference to expediting your voyage?

Answer. I have heard it spoken of as being something that would expedite the passage and make it more safe.

Question. What is your opinion as to the time it would take; I mean the difference of time between going that way and around?

Answer. Perhaps a day and a half would be saved.

By Mr. CONOVER:

Question. What would be the distance saved in going across the peninsula?

Answer. I should have to make a calculation to figure that out.

Question. Five or six hundred miles, I presume?

Answer. No, sir; not more than four hundred miles, I should suppose.

By Mr. WEST:

Question. What length of time have steamships been plying between New Orleans and Liverpool?

Answer. I think about twelve years.

Question. Do you know how many steamers have been lost in that commerce since that time?

Answer. I can only remember three that have been lost.

Question. Do you know how many steamships have been lost between New York and Liverpool within the last twelve months?

Answer. I could not tell you that. I do not recollect.

Question. So that in an interval of fifteen years there has been three steamships lost?

Answer. That is all to my knowledge.

Question. Where were they lost?

Answer. One was lost in the English Channel. That was one of our steamers. Another was lost on the Bahama banks; and one was lost here, on the bar, I believe. She was run into and sunk.

Question. How about sailing-vessels between the two respective routes?

Answer. There have been more sailing-vessels lost on Florida. The Florida reefs pick up a great many sailing-vessels.

Question. That is because there are a great many to pick up?

Answer. Yes, sir.

Question. Do you regard the sail-route between Liverpool and New Orleans as more dangerous than the sail-route between Liverpool and New York?

Answer. I do; much more.

By Mr. SHERMAN:

Question. Do you stop at Havana on the route?

Answer. No, sir; some of our steamers stop at Havana coming out. They touch at Spain, at Corunna.

Question. You do not stop at any of the islands between, however?

Answer. No, sir.

By Judge KENNARD:

Question. Is it or not a fact that since the close of the war there has been a large increase at this port in the steam-tonnage and a decrease in the sail-tonnage?

Answer. Yes, sir.

Question. In estimating your rates of freight between New Orleans and Liverpool, are you affected by depth of water on the bar?

Answer. Very much.

Question. If you had a uniform and certain depth of water to the sea from here of 25 feet, would you be able to diminish largely the present rates of freight or not?

Answer. We would. We have two steamers here now that will be ready for sea next week; and I have to lighter coal for them in barges down over the bar. And they have not a very large quantity of grain either. One has 20,000 and one has 10,000.

By the CHAIRMAN:

Question. What is their capacity?

Answer. One will carry 5,000 bales, and the other 4,000. I cannot load this one that I am speaking of to over 18 feet. I have had a letter to that effect from her pilot.

Question. How much percentage will that diminish her actual capacity?

Answer. They could be loaded to 22 feet if we had water over the bar.

By Judge KENNARD:

Question. Is it or not a fact that, as there is an increase of tonnage of vessels going from this port, there will be, of necessity, a diminution of the rates of freight?

Answer. Yes, sir; I think there will.

Question. In other words, is the difference in the cost of managing a

vessel of the largest tonnage and one of medium tonnage as great as would be the difference in freights between the larger and the smaller?

Answer. No, sir. The principal difference with a large or a small steamer would be the coal. It takes about the same number of hands, the same number of officers, the same number of engineers; but a small ship, perhaps, would take a few less firemen and less coal.

Question. You have had a good deal of experience in the difficulties at the mouth of the river?

Answer. Yes, sir.

Question. Is it, or not, your opinion that the commercial interests of this port will be advanced by submitting the regulation of the ingress and outgo of vessels over the bar to some one authority?

Answer. Yes, sir; I think it would be.

Question. Have not some of the difficulties which we have encountered arisen from the fact that vessels have undertaken to run the bar on their own account, regardless of the advice of the engineer in charge?

Answer. Do you mean by steam-tugs, or steamboats, or the masters of ships?

Question. By the masters of ships.

Answer. Yes, sir; I think that ships have been put on the bar at an improper time.

Question. Are you not of the opinion that some ships are put on the bar for the purpose of getting precedence; in other words, that they would, of necessity, have to be removed before a second ship could go on?

Answer. I do not know that I do know that, sir.

Question. I mean to say this: A and B own ships that are leaving this port; A knows that there is not water enough on the bar for his ship to go over; he runs her on the bar in order to compel her release before B can get out.

Answer. O, that is left with the tow-boat people, putting her on the bar, I presume.

Judge KENNARD. I wish to show to the committee this point: that, where A and B have a ship starting from this port, and A's ship draws more water than B's, B's not drawing too much water to go over the bar, and A's drawing a little more than is indicated as the depth of water on the bar, he puts his ship on it with malice prepense, so as to compel her removal before B can come on. It is an occurrence that is not unfrequent here, and hence the necessity of having some authority to regulate it.

The WITNESS. I know of a ship that has been put on to the bar to the detriment of our company very much.

By Mr. SHERMAN:

Question. Who puts them on the bar?

Answer. I presume that it was the captain of the ship, probably, who wanted to go on the bar, and persuaded the steam tow-boat people to put it on.

Question. Who controls it?

Answer. Nobody controls it.

Question. Every man goes as he can there?

Answer. Yes, sir.

By Mr. DAVIS:

Question. Is the passage so narrow that one ship only can pass?

Answer. One ship generally fills the channel up.

Judge KENNARD. If one ship swings across the channel there is no

chance for another to get by. As soon as they strike the bar they are swept around by the current. A year or two ago a ship was on the bar, and there was some twenty-six or twenty-seven steamers blockaded; they could not move an inch.

By Mr. DAVIS :

Question. Is it not dangerous and expensive for a ship herself to be run on the bar ?

Answer. O, yes ; there is danger of collision with other ships.

Question. No, no. I mean danger to his own vessel by hanging on the bar ?

Answer. No, sir ; I never heard of ships being injured on the bar.

Question. You cited the case of your steamer which was injured.

Answer. O, yes ; but she broke her propeller. That was from some sunken obstruction.

Judge KENNARD. The character of the bottom is such that ordinarily a ship will not be damaged ?

By Mr. CONOVER, (to the witness) :

Question. Your business is altogether in connection with ocean steamers between this city and Liverpool and other foreign ports ?

Answer. Yes, sir.

Question. So that you have no interest in any of the canal enterprises either across Florida, Georgia, or elsewhere ?

Answer. I have no interest in the Florida canal, but I have with the Fort Saint Philip Canal.

Examination of WILLIAM G. COYLE, in reference to coal and towing business.

Mr. COYLE. Mr. Chairman, I am running coal from Pittsburgh by tow-boats and tow-vessels, from the bar up to this port. If there is anything you wish to know about the bar, its mouth, its obstructions, depth of water from Pittsburgh to the mouth of the river, &c., I can probably give you such information.

By the CHAIRMAN :

Question. What obstructions, if any, are there between here and Pittsburgh, or what difficulties do you encounter in bringing coal down the river ?

Answer. We have none whatever to complain of. That is not the point. We wish to confine ourselves chiefly to the difficulties at the mouth of the Mississippi River.

Question. Have you any difficulty anywhere between here and the mouth ?

Answer. No, sir ; we lose thousands of dollars every year by lack of water on the bar, from the fact that steamers cannot take their coal here. They are always anxious to do it, but cannot, and have to go to other ports. Last year they went to Norfolk. They go to Port Royal and Havana ; vessels that I have regular contracts for putting coal on—in fact, all the vessels you have heard spoken of.

Question. Would it not be cheaper to lighter the coal down to the outer bar than to go to Norfolk to get it ?

Answer. Sometimes it is ; but sometimes it is difficult to do that. Outside of the bar it is sometimes very rough, and it is impossible, for two or three days at a time, when the wind is blowing from a certain direction, for the steamer to receive coal or cargo of any kind.

Question. The question occurred to me as to whether it was not economy to lighter a portion of the cargo down. Is that the reason?

Answer. That is one of the reasons. But it is somewhat expensive. It is in fact both dangerous and expensive. The lighter must be a sea-going craft, able to go to Europe herself, or else she cannot stand outside at some seasons.

Question. As soon as you get outside of this bar you are in the open ocean?

Answer. Yes, sir. The bar itself is five miles from what we call the mouth of the river. The real mouth, of course, is out where salt and fresh water come in contact. It is five miles from the nearest landing.

Question. Is that bar constantly moving out?

Answer. The bar is constantly moving out into the sea.

Question. At what rate?

Answer. At the rate of perhaps a hundred feet. It varies, though. One year it does not move at all apparently, and another year a hundred feet. But it averages, say, 20 or 30 feet each year.

Mr. WEST. More than that?

Mr. COYLE. It don't go any more than that. However, we speak of course at the entrance. It is sometimes stated as high as a hundred feet. I never heard of its being 300 feet.

By the CHAIRMAN:

Question. What are your charges for towage from the bar to the city?

Answer. We tow from sea to the city because we have to take charge of vessels outside of the bar. They come to anchor say from one to five or ten miles outside of the bar, as the case may be. Sometimes we tow them thirty miles from sea to the bar, and then up. The charge is from \$1.40 to \$1.50 up and down per ton, according to the draught. If there was deep water on the bar this charge could be reduced at least one-third, say 33 $\frac{1}{3}$ per cent. The charge is apparently high, but the cause is this: Vessels load here, going out and coming in, to a greater draught than there is water on the bar. When they go down there they are put on, and have to wait for tide; and we put on from two to four or five tow-boats at a time. They lash up alongside of the sailing-vessel, and we have tugged at them there for a month at a time; and frequently three or four days before we could get them out at the tides. Sometimes it is rough weather; and in rough weather, the swells being very large, and sometimes as large as they are at sea, the tug-boat knocks against the sides of the vessel and tears herself to pieces. The engine gets out of line, the vessel is strained, and a great deal of damage is caused to the tow-boat. It takes three or four of them to get them out, and the wear and tear is great. If there was deep water, as I say, however, the charge could be reduced. If the Fort Saint Philip Canal was established, I think the charge would be reduced at least one-half; and instead of being \$1.40 or \$1.50, it would be perhaps 75 cents.

Question. You have a fixed charge of so much a ton, carpenter's measure?

Answer. It is United States measurement, registered tonnage.

Question. And it does not vary if you are detained a shorter or longer time; you make a contract to do it for so much?

Answer. Yes, sir; the vessel has to go to sea, and we take her down; and if we get her out in five minutes, it is to our advantage of course; and if we keep her there for a month, as a general thing, it is no more.

By Mr. DAVIS :

Question. Is that empty or loaded ?

Answer. They never go out empty. They always come in here in order to get a load. But coming in from Europe or elsewhere the same thing has to take place. If they are over 17 or 18 feet there is difficulty in getting them in, except at certain seasons, when we have very high tides. Those are occasional, however. Sometimes, if the wind is in a certain direction, it will make 20 feet of water on the bar. But that is only occasional. At other times we have only 16½ to 18—16½ at low and 18 feet at high tide.

By the CHAIRMAN :

Question. So that the charges for towing could be reduced, as I understand you, in two ways ? In the first place, if a vessel could go out loaded, instead of carrying only 70 per cent. of her load, she would make 30 per cent in that way, as you would tow her for the same price, you charging by the ton.

Answer. Yes, sir; without what she carries. Now, some vessels measure more than others. One vessel will carry a thousand bales of cotton, and another, of the same registered tonnage, twelve hundred bales. It depends on the shape of the vessel. As I say, we could reduce 33½ per cent. if we had deep water continually on the bar.

Question. You gave us by the measurement of vessels of 1,500 tons the charge of how much ?

Answer. The charge covered towing in and out. She would, of course, draw over 18 feet, in that measurement, and it would be \$2,250 up and down. But she charges that, of course, on her freight, and the freight would be less as the towage was less.

Question. What is the cost of towage from Pittsburgh here on coal ?

Answer. About 6 cents a bushel.

Question. That includes the whole cost of transporting the coal ?

Answer. Yes, sir; it does not include, of course, the cost of the barge which contains it, but simply the towing. We do not take the vessels back; we build them in flat boats of inch and a half plank, and break them up for old lumber. The cost of the coal is included in the cost of the flat-boat originally.

By Mr. DAVIS :

Question. How many miles is it ?

Answer. From here to Pittsburgh it is about two thousand two hundred to two thousand four hundred miles. I am not certain which. It is over two thousand two hundred and less than two thousand four hundred. I do not know the exact distance.

By the CHAIRMAN :

Question. It does not cost much more to tow a barge with coal from Pittsburgh here than a vessel out and in over the bar; it does not cost much more per ton than it does per ton on the vessel ?

Answer. O, yes; it does. We have to take the cost of getting back to Pittsburgh. It costs about \$10,000 for a two-boat to make a tow between here and Pittsburgh. I might as well say that the sailing-crafts which come here rarely get up to 1,500 tons.

Question. Then 6 cents a bushel, or \$1.50 a ton, on coal is all the coal exporter pays. You get the coal-boats back at your own charge ?

Answer. Yes, sir; we carry a large quantity of it down, however—400,000 bushels in a tow.

Question. Do your boats tow the wheat barges ?

Answer. We are not engaged in that. Our boats simply tow coal. We could, of course, tow the wheat.

Question. They are the same kind of boats?

Answer. The same kind exactly. A tow of coal is \$24,000 coming down.

Question. I have a statement here, submitted by the Chamber of Commerce, and wish to call your attention to some items: "The Future City, tow-boat, and five barges of the Mississippi Valley Transportation Company; coal fifty tons per day, at \$2.50 a ton." How do you regard these figures—as about right in amount?

Answer. Yes, sir; at Saint Louis. That is the price there.

Question. Is that about the quantity that such a tow-boat would use?

Answer. She ought not to use that much.

Question. "Engineers, one \$3 and one \$5 per day?"

Answer. That is right.

Question. "Captain, \$5?"

Answer. Yes, sir; although we pay more than that to our captains.

Question. Coming with coal-barges, do you pay more than that?

Answer. Yes, sir.

Question. How much?

Answer. We pay them \$3,000 a year.

Question. How much do you pay the men?

Answer. About the same as here.

Question. About \$1.50?

Answer. Yes, sir.

Question. "Pilots, (two,) at \$5?"

Answer. We pay more than that to our men. We pay double that—\$2,500 to \$4,000.

Question. I am speaking now of the upper river.

Answer. I am speaking of the same.

Question. Would pilots command a better price from Pittsburgh than from Saint Louis?

Answer. Yes, sir. It is a more difficult river.

Question. What do you say as to its being a fair compensation here?

Answer. I know those are the prices that are paid to those men. As a general thing, however, we pay in the coal-trade more than these prices. But our boats are more powerful than those boats used in this trade, and we can carry one-third more, at least, than they do. So that our charges for chief officers, although they are a little more, still, on the whole tow, it amounts to less than this pay. We actually get it for less. The only outlay is in the original cost of the tow-boat. Ours cost from \$70,000 to \$100,000, and these from \$30,000 to \$50,000. Of course, we have smaller boats, which we use in the upper rivers. I am exceedingly anxious to get deep water, to sell more coal, and also that I shall not wear my boats to pieces while they are towing vessels.

By Mr. DAVIS :

Question. I understand you to say that the reason you had to charge \$1.40 or \$1.50 for towing out and in, is that vessels sometimes get on the bar and are detained there?

Answer. Yes, sir.

Question. How is it when the vessels draw 12 or 15 feet of water, which are never caught there; do you charge less for that class of vessels?

Answer. Yes, sir. We charge sometimes only \$1.25, and have towed them up and down for \$1.

Question. What is your usual charge?

Answer. One dollar and forty cents to \$1.50. But, as I say, we have towed those for \$1.25 or \$1, for vessels only of that draught.

Question. Have you a monopoly of towing, or can any one who has a tow-boat tow a vessel up and down?

Answer. We have no monopoly, and anybody who wishes it can tow on the Mississippi River, up and down.

Question. Does any other person own tow-boats running from here out over the bar?

Answer. (Interrupting.) When you say a monopoly you mean the right, of course, of anybody. Well, you can go and tow there. I wish that matter plainly understood. That is all.

By Mr. WEST:

Question. Is not your organization a virtual monopoly? You are the only one who owns tow-boats between here and the bar, towing vessels up and down.

Answer. I am not the only one. No, sir. But in order to answer more freely, and to come to the point quickly, and to stop answering questions, I am associated with others. There are four or five companies—five companies, in fact, that are towing from the sea to the city, and I form one of those companies.

Question. Do you mean four or five organizations?

Answer. Four or five different organizations, with different presidents, different managements, and sometimes they run in opposition to each other and sometimes they run together.

By Mr. DAVIS:

Question. Are you together now, sir?

Answer. At the present time we are. But we will not be any longer than May next.

Question. How long have you been associated together?

Answer. We have been together for three years, to my knowledge. We have had opposition, however, at various times during that period. We have been for five years together, although we ran in opposition for about a year. But we have been running together now for three consecutive years. In that time we have had other boats engaged in the towing trade running against us.

Question. How often has your rate changed in the last three years?

Answer. Our regular rate has changed twice or three times, I believe; twice, anyhow.

Question. What caused the change?

Answer. Perhaps opposition did. It generally does.

Question. How did you get rid of opposition when you got it?

Answer. Fought it, sir, as anybody does in any other business.

Question. What becomes of it after you are done fighting it, or during the fight; what is the general result; do you get together and combine?

Answer. We have fought against each other and lost so much money that we thought it folly to do so any longer, and have come together and combined to charge a certain rate.

Question. You are all together now?

Answer. No, sir; not in ownership or anything of that kind, but simply have agreed on the price.

Question. What has been your lowest price within the last three years?

Answer. A dollar, I believe, has been the lowest price; a dollar for towage up, and 25 cents for towage down, making \$1.25 up and down. That is the regular charge. We have towed for less than that at times; for 75 cents, 80 cents, 90 cents, 95 cents, as the case may be, and as we are compelled to. We did not pretend that 75 cents paid us, but we took it and lost money at it.

Question. How many miles is it?

Answer. One hundred and ten miles to the bar. We ordinarily, however, take vessels thirty miles to sea. That makes one hundred and fifty miles, and double that up and down is three hundred miles.

Question. The rate from Pittsburgh for towing coal two thousand four hundred miles, I understand, is about \$1.60 a ton, according to the way you gave it to us?

Answer. Admit that it is so.

Question. Then the rate from here down over the bar is nearly, if not the same? It is \$1.50, say.

Answer. Yes, sir.

By Mr. WEST:

Question. From here over the bar?

Answer. No; he means up and down, from sea to sea. They are taken some distance outside of the bar, as I say, before they are let go, so that the distance is more than two hundred and twenty miles. However, you must take this into consideration: From Pittsburgh down we come with the current; the current drives the whole tow.

(Have you ever seen a coal-tow in the river, Mr. Davis?)

Mr. DAVIS. O, yes.)

The WITNESS. Then you know what it is; the current brings it. It is not taken against the current. From the bar, however, we have to tow against the current. There is a four-mile current. Then, too, it requires a different class of vessels, and vessels also do not last as long. The vessel that you have to go to the bar with costs a good deal of money, and the wear and tear on them is much greater from the causes I have just described to you.

Question. How do you get over the Louisville Canal; do you pass around it or through it?

Answer. It depends on the stage of the water. If there is not sufficient water in the falls, of course we have to come through the canal.

Question. What have you to pay when you come through that?

Answer. About half a cent a bushel, or a fraction less than half a cent.

Question. In other words, that is 12 or 13 cents a ton, isn't it?

Answer. Yes, sir; about 12 or 13 cents a ton.

Question. Who pays that?

Answer. The owner of the coal. We pay it, of course. We are the owners of the coal and the owners of the tow-boats.

Question. You pay it?

Answer. Yes, sir.

Question. This is included in the \$1.60?

Answer. No, sir; that is extra. Sometimes, you know, we don't pay it, because we come through over the falls. Then, too, coal sometimes costs us 10 cents, if we should happen to be a long time on the way, and be caught in low water at an island or on the bar. I am giving you the ordinary run of high water.

Question. Will the boat that tows your coal down tow your vessel out to the bar?

Answer. No, sir; it is not suitable for that purpose; it would sink. A vessel that goes over the bar has to be a sea-going vessel, capable of going anywhere in the ocean; and if you have ever seen a tow-boat in the river, you will have observed that they are only a foot or two feet above the water. The waves would sink them in an instant.

Question. You say your organization for towing out and in now consists of four different organizations?

Answer. Yes, sir; four or five.

Question. And you have gone together and made a uniform rate?

Answer. Yes, sir; that is all.

Question. Do you divide the earnings among you?

Answer. Yes, sir; according to our proportion of boats. Some have more boats and some less, and of course they divide it according to their *prorata* of boats, or of capital invested in other words, which amounts to the same thing.

Question. And as new companies who have been in opposition to you have organized, you have taken them into your combination and divided with them, have you?

Answer. There has been only one new company since the war, and that has been taken in, after running a couple of years in opposition.

Question. What does it cost you to tow a vessel from here out, say, a vessel drawing 15 feet of water? What time is consumed? What is the actual expenditure?

Answer. Do you mean from here only?

Question. I want to know the actual cost of towing it up and down.

Answer. For a vessel of that draught it would not exceed \$500; say \$600.

Question. What would you get for it?

Answer. It would depend on the tonnage altogether. If she is only a hundred tons, we get \$100 or \$125, or \$150; that is, as the case may be.

Question. Well, you know what a vessel drawing 15 feet of water ordinarily would be?

Answer. Her tonnage would be 700 or 800 tons, although the draught of vessels do not always correspond.

Question. Speaking ordinarily?

Answer. Well, 700 or 800 tons, I suppose. We would get for that, say \$900 or \$1,000.

Question. It would cost you, you say, \$400 or \$500?

Answer. Yes, sir; and perhaps \$600, depending on the seasons. Still, we have the tow-boats down there, and they do nothing for a week at a time, perhaps. The expense of that, except the burning of the coal, is the same as if they were at work.

Question. What is the total capital of your organization?

Answer. Do you mean of the five companies?

Question. Yes, sir; the actual cost.

Answer. One million of dollars.

Question. How many boats have you?

Answer. There are twenty-two.

Question. What per cent. do you divide or pay on your capital per annum?

Answer. That depends on circumstances. Some years it is more and some years it is less, according to the amount of repairs that have to be made on the tow-boats. Some years there has been none whatever.

Question. What are the years?

Answer. Some years nothing has been paid. I have known two

years at a time that I have been connected with them, and there was nothing whatever paid. Other years 8 per cent; another year 15 per cent., and another year 20 per cent.

Question. Were you building new boats and increasing your stock at the time you paid none?

Answer. No, sir; I believe we ran in opposition to each other.

By Mr. SHERMAN:

Question. It is a profitable business, I suppose, on the whole?

Answer. That is the reason, probably, that we came together.

By Judge KENNARD:

Question. You have given the committee the rates of towage where you engage to bring a ship in and take her out, or take her out and return. In case a ship undertakes to run the bar on her own account, without reference to your associations, these rates do not apply, do they?

Answer. Unless she gets too badly grounded.

Question. I mean to say this: You have already given the exact rates of tonnage where you take the contract from here to carry a ship out. Now, if the ship undertakes to run the bar on her own account, those rates have no application, have they?

Answer. Yes, sir; we charge the same rates, unless she gets so badly grounded that it costs a good deal of money to get her off before they make a contract with us.

Question. Were the rates that you charged the steamship Memphis identical with the rates that you have testified to here?

Answer. The rates I have spoken of have reference altogether to sail, which I suppose everybody understood, and not to steam. Steamboats take the assistance of tow-boats rarely, and there are no rates fixed for them. There is a contract made at each and every time.

Question. Have you looked into this bill of charges of the steamer Memphis?

Answer. I have not.

Question. I wish you would look at it and state whether it is correct. State whether the amount paid of \$8,400 is correct?

Answer. I did not receive the money.

Question. Do you happen to know whether that is correct?

Answer. I cannot swear that it is.

Question. Can you swear that it is not?

Answer. I do not deny that it is the fact, but I am not aware that it is. I do not refuse to answer the question at all, but desire to say that I am simply not aware that it is the correct price.

Judge KENNARD, (to the committee.) My understanding is that where a steamship undertakes to run the bar on her own account, without consulting the company, the company are not confined to their regular rates.

Mr. COYLE. We have no regular rates for steamships, but we work on them at the rate of \$50 an hour. We are not, however, confined to the rates.

By Judge KENNARD:

Question. Is that \$50 an hour for each boat?

Answer. Yes, sir. The steamer has as many as she chooses to employ. If we had five tugging at her the cost would be \$250 an hour.

By Mr. SHERMAN:

Question. Are your companies partnerships or corporations?

Answer. Some of each ; mine is a corporation, as is the majority.

Question. Then you are subject to the power of the State of Louisiana to alter, change, or repeal your charter ?

Answer. Certainly. I would like to make a little statement. It is in reference to a collision between the tow-boat company and the engineer in charge at the passes. I would like to say that the only collision that ever occurred between the tow-boat company and the engineer at the pass was this : The engineer, about a year and a half ago, stated that nothing should pass the mouth of the river, without his consent, between the hours of 7 in the morning and 5 in the afternoon. If there are any seamen on this committee, they will know that vessels are put to sea and arrive at the high flood-tide. If flood-tide happened to be between those hours, no person could put vessels to sea, and at night-time it was low water ; and they would have to remain until the engineer saw fit to quit. The tow-boat association, of course, refused to cease their work, and allow him to work between 7 and 5 ; and if that should be continued forever, there would be no work whatever done on the bar. The system of dredging which he has adopted is to stir up the mud and take it out. We contend that the proper time is at the ebb-tide to take the mud out, but not when the tide is coming in ; and if a gentleman was put in charge of the bar, and confined to work from 7 to 5, not one-half the tonnage could arrive and depart that comes to New Orleans at the present time. In winter we have high tides chiefly at night ; and the tow-boats desire no collision with the engineer in charge or anybody else. They simply wish the privilege of conducting their business at suitable hours. I would simply submit whether it is right always to establish certain hours in the day, to make others work at night, when the best water was in the day-time. I wish to say that there is no enmity whatever existing between the engineer in charge and the tow-boat association. In the first place, the engineer in charge has not worked there since May, 1872—at the pass we use. We have not been in collision with him since that time.

Examination of Hon. JOSEPH H. OGLESBY, president of the Chamber of Commerce of the city of New Orleans.

Mr. OGLESBY. Mr. Chairman, I simply propose to call your attention for a few minutes to this question in a commercial and financial point of view, as it presents itself to my mind. The figures and statements given will show you the comparative rates of transportation. My only object to-day—for I hope to have the pleasure of meeting you on Monday, when we can converse upon these things leisurely—is to say that in my opinion an outlet this way for grain from the Northwest, and a speedy and certain passage to and fro of vessels of sufficient draught of water, would be of immense benefit to the whole country. The benefit flowing from that, in my judgment, would be this : Financially it would relieve the banks of the West, and North, and Northwest of carrying these enormous quantities of grain during the winter months, which cannot be moved except in comparatively small parcels by rail. That would take a burden off the West, and the advantage immediately derived would be very great.

Another consideration which has great weight with me is this : This grain is kept in the West, in elevators, in warehouses and elsewhere during the winter months, when the germinating principle in it is perfectly dormant. It is not moved in large bodies until after the middle of April. In March and April the germinating principle of the grain

manifests itself, no matter where you put wheat and corn, and that is the real reason why at least 60 per cent. of the receipts of grain in the port of New York in June, July, and August are totally unfit for food and shipment abroad, and why it goes into distillation. With the tide turned this way, that corn would move here in November, January, and February, and find an outlet and consumption in the world's market before that principle of germinating manifests itself at all. These two features, in my judgment, are two of the most important on the subject. I have kept grain here in the elevators during the latter part of November, December, and January without any detriment whatever.

I do not think the report furnished you is quite as full on the question of transportation as it might be. I have given this matter some attention. I have made two or three special trips to Europe to endeavor to establish a line of steamers here. We got along as well as other parts of the world, when all was moved by sail; but the last twelve or fifteen years has wholly changed the nature of the commerce of the world, and it now goes by steam. Our friends and correspondents on the other side are perfectly willing to give us steamers on 24 feet depth of water; but they cannot do any more than that.

Now steamers to carry 50,000 or 60,000 bushels of grain and three thousand bales of cotton, would make profitable trips. They could come in on a depth of 24, 25, 26, or 27 feet, as the case might be. Once establish them, they would naturally bring for distribution to New Orleans all the importations of the West and Northwest. That would give return trips to outward-bound vessels from here. As it is now, a vessel coming to New Orleans must bring sufficient on her down trip to pay the entire round trip and return to the point of departure. If we had those steamers coming here it would necessarily bring property down, and they would get return trips that would enable down trips to be brought at a reduced rate. Very experienced men have satisfied me that 6 or 7 cents a bushel on grain from Saint Louis here would be sufficient. But the charge has been 10 or 12 cents, because we get no return freights.

It would be a great advantage if we had an outlet from here through the mouth of the river during the entire season. It would give a steady stream to the consuming markets of the world, and would stop the enormous stocks that are carried during the winter months on the lakes, and would make this grain to move to the world's market, as I say, before this germinating principle in the spring manifests itself; and the saving in damage to grain thereby would be a percentage which I would not like to declare, for fear it would be estimated too high. But I have been in New York and noticed the arrivals there, and I noticed from 50 to 60 per cent. of their summer arrivals were damaged. That, with an outlet through the winter months, would have found its way months and months previous to the markets of Europe, been sold and consumed, and the money returned. It costs no more for railroad transportation from the interior points of Cairo than from Chicago. The movement, therefore, that now takes place at Chicago would, in event of an outlet here, take place at Cairo. This movement would be continuous, because there is never obstruction to navigation from Cairo here. It is open winter and summer. I have lived in New Orleans thirty-three years, and but twice in that time has there been any obstruction between Memphis and Cairo. With an outlet here, with regular lines of steamers trading, and any assurance that dispatch would be given to cargoes, this movement from the west would continue entirely throughout the winter months. The rails would be relieved,

and it would deprive them of the opportunity to make the high charges they are now demanding. I think there is still enough, however, for both lines to be fully engaged at remunerative prices. The main feature, in my mind, is that this grain may be moved during the winter months, when the germinating principle is entirely dormant. It would add millions to the wealth and income of the farmers. For instance, take the present price in the West and the price in Liverpool, and the cost of placing it there by way of New Orleans, admitting that we have a 25-foot water-depth out. The advanced price in the West would be not less than 8 to 10 cents a bushel over that which rules there to-day. That would enure at once to the farmer. He never has been paid for his product. The gross products of the western farmer are not \$14 an acre.

By the CHAIRMAN:

Question. In your observations abroad and your long experience here, what do you think is the reason that this trade has not been opened in this way?

Answer. Since 1858 steam-navigation has increased with wonderful rapidity. Prior to that time I suppose 75 per cent. of the world's commerce was by sail; and when that was the case, New Orleans had an equal show with every other exporting market of this country. But now 75 per cent. of the world's commerce is done by steam. Telegraph and steam have entirely revolutionized the whole order of things. I can hardly explain it better than by giving you an interview I had two years ago with a large cotton-spinner in Manchester. He formerly sent his orders here for cotton; and I asked him why they were not now sent here instead of to New York. He says: "Establish steam to New Orleans, and I will send my orders to you, for the reason that I can get better selections there; but with steam and telegraphy I can run my mills up to thirty-six hours supply. I can telegraph from my office here to New York to buy me so many hundred bales of cotton, and ship by first steamer. I receive a dispatch by to-morrow, saying, 'cotton bought and going on the Russia.' I can count on her arrival at Liverpool and the cotton's arrival at my mill upon almost a certain day. Therefore, I carry large stocks, and I do not lose large interest. If I were to send a dispatch to New Orleans, where there is no steam, or occasional departures of steam, my agent might telegraph me back that the cotton was bought and going on board such a ship. I do not know whether that ship will sail in ten or thirty days. She will sail when she is full; and when she does sail I do not know whether she will arrive here in forty or ninety days; and therefore I cannot send to New Orleans for my supply."

Now, it would do wonders in building up a local business for New Orleans, and through that, I think, it would very materially benefit the entire country. In fact it would not do so much for New Orleans as for the interior of the cotton or grain growing States. I am satisfied by experience, taking Saint Louis as a central grain point, that grain can be placed in Liverpool quicker and 15 cents a bushel cheaper than by way of New York, the year round, if you give us proper facilities to get to the deep water of the Gulf. It is clear that 15 cents a bushel (or whatever it may be) will enure at once to the producer of this crop, and it would therefore be the means of giving to the farmer of the West that which he has never received, namely, an adequate return for his labor. I do not speak of this matter or urge it particularly in favor of New Orleans, which would be the place of transshipment, but it would fill

up the waste places of the Southern States, and the rapidly-developing West. It would not interfere with any railroad movement, because there is amply enough to satisfy both.

By the CHAIRMAN:

Question. I am aware that before the war shipments of cotton from New Orleans exceeded those of any other portion of the country very largely; but I do not remember how it was as to grain. Can you answer that?

Answer. We had scarcely any movement of grain here. I joined in building this elevator which we have in order that we might secure facilities for handling grain, and believing that the grain-trade of the West must be a leading trade of this country. To satisfy the prejudices of those abroad, I purchased grain, brought it here, and sent it abroad. To show the uncertainties of sail, on one occasion we loaded at the elevator two barks of about the same capacity, one, I think, carrying 29,000 bushels of wheat, and the other probably 31,000. They left here within thirty-five hours of each other. One was supposed to be a faster bark than the other. They struck counter winds. The one reached Liverpool in twenty-eight days and the other was forty-nine days out. The one's cargo came out at Liverpool in first-rate condition; the other came out somewhat heated, and it made an average safety from loss. One paid a profit a little greater than would have covered the loss on the other, so that the venture came out a little ahead.

But everything, gentlemen, now-a-days, in this business world of ours, goes upon the certainty and directness of steam. I think that ten years hence sailing-vessels (except for carrying timber, and matters of that kind) will be a thing unknown. It is a long voyage from here to Liverpool of about four thousand four hundred miles. I have made it in an ordinary steamer to Southampton, a little farther than Liverpool, in sixteen days from here.

The proprietors of the White Star line of steamers, now trading to New York, and in my judgment the best line of steamers for business that cross the ocean, have told me that with a draught of 25 or 26 feet of water, they would put on a similar line to New Orleans. Now, vessels of that class would carry readily 60,000 bushels of grain and 4,000 bales of cotton. As you increase the carrying capacity of a ship you decrease in a ratio the cost of transportation. A vessel of that kind, and with water sufficient to get to the deep waters of the Gulf, can make money in carrying grain from here to Liverpool at 9d. a bushel—that is, 18 cents. And I contend that 7 cents a bushel down from Cairo is, in my judgment, a maximum rate of freight, if ever we get this done. There is 25 cents a bushel, and 1 or 2 cents, as you please, here for expense, which would be 27 cents from Cairo to Liverpool. The lowest average price of grain in Liverpool is about 83½ cents per bushel of corn, and I take corn as a criterion. It is fairer, too, for the proposition that I make, because it is bulkier, and more likely to damage than wheat. We have had but one competitor in the Liverpool market, and that is the Russian product; but if you will take the tables you will find that Russia cannot lay corn in Liverpool at 83 cents.

By Mr. SHERMAN:

Question. Do they produce much corn in Russia?

Answer. The Baltic and Black Sea supply it. They are the only competitors of American producers in the corn-markets of the world; and with the facilities that a ready outlet from here to deep water would

give us, the grain-growers of the West would sweep all European corn-growers out of the way.

I think there is a mistaken idea about the time occupied in taking grain from Chicago to New York by lake and canal. It is a pretty long trip, and it is a slow trip. You can take the records of the New York grain market; and I do not hazard much in saying that 60 per cent. of their receipts there during the summer months, which have been kept through the winter, and carried at a high cost, tying up vast sums of money which ought to be used and should be used in other things, has passed into distillation, the damaged grain being so very great, and comes back in the shape of bad whisky. With an outlet here I think that would all find its way to the world; to be consumed, turned into money, the products scattered over this country again long before, as things now are, it reaches tide-water at all.

The entire trade of New Orleans before the war was second to New York only. Now, we have nothing of the kind. The rate of freight on what they call fourth-class cargo from New York to Saint Louis, taking that as a central point, will average about 94 cents a hundred, if I am rightly informed; and that same property can be delivered from New Orleans to Saint Louis at 20 cents. Everything that cheapens commerce promotes movement. Here, at once, is a saving of 74 cents a hundred pounds on all that is imported for consumption and trade in the West. Another thing, it would create a hearty competition, which, if it had been in existence this fall, would have very greatly benefited your constituents. The average price of freight on grain from New York is seven cents a bushel; but this season they have charged as high as 16*d.* There was no competition. Competition cheapens. Had this canal been built or navigation to deep water with 24 or 25 feet, and steamers coming to New Orleans, you would have heard nothing of 17*d.* per bushel for grain from New York to Liverpool, and begging ships to take it at that. It would have come this way. There would have been a good deal going both ways. We would have shipped it from here at 10*d.*, and it would have been shipped from there at 7*d.*

Examination of Col. JAMES T. TUCKER, general agent of the Illinois Central Railroad.

MR. CHAIRMAN, I desire to present to you, briefly, my views upon the question of how the improvements of the river and the opening of this canal will benefit the West. I have been here twelve years. I was sent here to represent the company, after having been with them in the West for a long time. We selected New Orleans to bring about the system of the importation of goods by New Orleans to reach all western points, as against New York. We have now completed our line of railroad and opened it through to Chicago, without change, carrying imported goods from here to all western points with no change whatever, as far as carrying goods, with or without appraisement; is concerned. That is rail all the way. We reach all western points—Dubuque, Saint Paul, &c.

Question. You carry goods in bond?

Answer. Yes, sir. The benefit of a canal would allow the large steamers to come here which go into New York, bringing imported goods. The West is supplied principally from New York. Imported goods are now coming here in large quantities for the West, which before this we had been carrying by barges and steamboat to Cairo, on account of the cheapness of transportation. The steamers of Captains Weeks and Miller bring large quantities of goods consigned to us

We simply reach rail points. By cheapening transportation, by having larger-sized ships, we could very much reduce the cost of bringing those goods here; and even now we beat New York nearly a hundred per cent. We can carry to almost every point in the West, at not over 60 cents a hundred, of any kind of goods. We call all our goods fourth-class, however, and we have done that to facilitate the business.

By Mr. DAVIS :

Question. What is your rate from here to Chicago ?

Answer. Thirty-five cents a hundred pounds to-day. I carry sugar, molasses, and rice. We make no rate to Cairo. We have got to get beyond Cairo. By rail I could take goods at 55 cents. Thirty-five cents is by barge from here to Cairo, and then transferred to Chicago by rail. We prorate from here to Chicago.

Question. What are the terms that you prorate on, water and rail ?

Answer. Two to one, just one-third. But we do better than that: if there are three boats here, one going to Cincinnati, one to Louisville, and one to Saint Louis, all wanting Illinois Central freight, one will offer to take it at 15 cents, another at 17½, and perhaps another at 20; but my through rate, however, does not change; I give the full bill-of-lading and the company give the shipper the benefit. We have reduced the rates so much to encourage the trade. We call it two to one. For instance, we are three hundred and sixty miles from Cairo to Chicago, and they are one thousand fifty miles from here to Cairo, and they only get four-tenths and we six-tenths. The extreme would be four-tenths to them under any circumstances. Out of ten-tenths we should, under no circumstances, allow them more than four-tenths.

Question. And they haul one thousand and fifty and you three hundred and sixty-five miles ?

Answer. Yes, sir.

Question. What would that rate be per mile for you and what for the river ?

Answer. I think it would be on the river not quite half a cent a ton a mile, and for us about a cent and a little over a quarter—about a cent and a quarter a ton a mile at that rate, and about half a cent for them.

Question. Do you also prorate this way—southward ?

Answer. Yes, sir; at Cairo, coming down. The boat comes along in this way: if she is loaded she does not want our freight so much. If you want a general average I can give it to you. A general average is about two to one. If we should get \$1.10 on flour, we should allow them 35 cents a barrel.

Question. And they have nearly three times the distance ?

Answer. Yes, sir; they have, as I say, one thousand and fifty miles, and we have three hundred and sixty-five miles. We call that one-third. The distance between Chicago and New York is nine hundred and twelve miles by rail, and between here and Chicago nine hundred and eleven miles.

By Mr. DAVIS :

Question. My idea is particularly to get the rate of freight between Chicago and here. What would you get per ton per mile, and what would the river get per ton per mile, in your prorating ?

Answer. I think, on an average through the year, we should get about a cent and a half per ton per mile. I think we can do the business for that, and that they can do it for half a cent a ton. Three to one, as I say, would be about it. We are forced to that, as you are aware, by competition.

By Mr. SHERMAN:

Question. How much is your through freight?

Answer. From Chicago here, to-day, would not exceed 60 cents per 100 pounds.

Question. How much do you get per 100 pounds from here to Chicago?

Answer. By water and rail I could take it to-day for 35 cents a hundred, and by rail all through 55 cents.

By the CHAIRMAN:

Question. Your rates from Chicago here by rail and water would be about equal from Chicago to New York?

Answer. No, sir; we beat New York. We carry flour and pork and bacon. I think they are charging from 73 to 76 cents. We could carry wheat much better. We would put wheat in bulk lots, because we are allowed to do that by law; but 55 cents will cover the average of fourth-class freight; that is, by whole car-loads. From here to Chicago on imported goods, we could take them easily at 40 cents a hundred pounds by water and rail, or at 50 cents by all rail. I have given 55, because I would rather furnish the extreme than the inside figures. Allowing the boat four-tenths, freight can be carried from here to Chicago at 40 cents, and money can be made.

By Mr. SHERMAN:

Question. You get about six times as much as they do per ton per mile?

Answer. No, sir; we pay them 15 cents out of 45.

Question. You carry one-fourth of the aggregate distance?

Answer. Yes, sir.

Question. And you get two-thirds of the aggregate pay?

Answer. Yes, sir; we get one-third more than they do. We get six-tenths and they get four-tenths. We get six-tenths out of any freight we take from here to Chicago.

Judge KENNARD: I desire to call the attention of the committee to a matter which is closely connected with the transportation question. The Mississippi and Dominion Steamship Company of this place own and run seven steamships from here to Liverpool, and they have paid for their own warehouse about \$25,000, and have obtained a permit from the Secretary of the Treasury to make it a bonded general-order warehouse, which they understood is a common thing in all the northern cities. They are refused the privilege of having it as such by the deputy collector of this place.

Mr. SHERMAN: We ought to know the reason of that refusal.

Captain WEEKS: We bought this warehouse for the benefit of our line. We have come here and spent \$25,000, and will probably spend \$25,000 more on the property. It is for the benefit of our steamers, so that they can discharge without any detriment to the line. It is abreast of where our ships lay. Our application went in to the Secretary of the Treasury for a general-order bonded warehouse, class 3. It was accepted by the Treasury, and bonds were made out and signed, and went on and they were correct. It came back, and after we had conformed to all the rules, Mr. Herwig, the deputy collector, told us we could not have it as a general-order warehouse, but as a bonded warehouse, class 3. It was only for our own steamers that we asked.

By Judge KENNARD:

Question. Why was that refusal made?

Answer. He says that it rested with the collector of the port. He had that privilege of appointing whom he thought proper.

By Mr. SHERMAN :

Question. Did the Secretary designate you for a general-order warehouse?

Answer. Our application was accepted as a general-order warehouse.

By Judge KENNARD :

Question. In other words, the order was modified by the interposition of the officers of this port?

Answer. Yes, sir.

Colonel TUCKER : I will say, Mr. Chairman, that there is somebody in the custom-house who owns all the bonded warehouses in town, by which all of us, shippers from here, who import and receive nearly all the bonded goods, do not receive the necessary facilities. There is something thrown in the way, and we never have any goods come that do not go to a particular warehouse, and if we forget for one minute to get them at the custom-house, they go into that warehouse.

NEW ORLEANS, LA., *December 30, 1873.*

JAMES B. QUINN, first lieutenant Corps of Engineers, United States Army.

By the CHAIRMAN :

Question. Have you been connected with the survey of the proposed Fort Saint Philip Canal?

Answer. Not directly.

Question. Have you had any occasion to examine into the history of this enterprise?

Answer. I have, as a matter of general interest in the office.

Question. Please state what you know about it, its origin, and the surveys that have been made, and the references to them, giving years, &c.

Answer. As to the history, I know it dates back nearly a hundred years. I cannot run it back further than what has transpired in the office since I have been there, for the past year or so. I know that a survey was made, the last one under the direction of Major Howell, by Lieutenant Adams, of the Corps of Engineers, and all the data upon which the present estimates are based are obtained through means of that survey. Of course the selection of position depended upon the recommendations which have been made years before, and the advisability of the construction of the canal has resulted from a consultation with the best authorities in regard to engineering.

Question. Please give us the reference to the various reports on the subject made by your corps?

Answer. I don't think I can state the years. Various reports have been made on the work by different parties of the Corps of Engineers, and others have been made to the State of Louisiana by civil engineers. The dates and references are included, I think, in Major Howell's report on the Fort Saint Philip Canal, of 1872, to the Chief of Engineers.

By Mr. SHERMAN :

Question. What do you propose to do? What is the nature of your canal; how long, how wide is it, how much will it cost? What is the plan of the canal?

Answer. The canal is to pass from deep water of the Mississippi River to deep water on the Gulf of Mexico. It would be about six miles in length, with a lock at the Mississippi end of the canal and a guard-lock at the Gulf end.

Question. A lift-lock at the river?

Answer. Yes, sir. The lock proper is at the river end, and a guard-lock to be used simply in case of hurricanes or extraordinary storms in the Gulf, to prevent the sea washing in and filling up the excavated channel with sand and other material. The lift-lock is to be situated 400 feet from the banks of the river. The last decision of the board in regard to the extent of it was that it was to be 500 feet in length and 65 feet in width, with 27 feet of water over the miter-sills. The rise of the river above the level of the Gulf at this point is about 5 feet, which would represent the extreme lift of the lock. At periods of very low water it would be much less than this, say $2\frac{1}{2}$ to 3 feet. The object of this lock is to avoid the difficulties of the bar at the mouth of the river. It is continually accumulating from the deposit caused by the material in suspension in the water being deposited from the current, being arrested while in an exposed condition, where it would be difficult to remove it sufficient to contain a depth that would answer the requirements of commerce. If this water was allowed to pass into the canal, it would of course cause a deposit, and the object of the lock is to detain the water from passing into the canal, and pass this water that passes into the lock necessary to give the rise, to permit vessels to enter the river from the Gulf into exterior channels, and avoid this deposit in the canal.

By Mr. CONOVER:

Question. Explain how you will prevent the deposit in the canal, and prevent it filling up from the waters of the Mississippi?

Answer. The object of the lock was to prevent the waters of the Mississippi from entering into the canal, and enable us to pass only so much water as was necessary to enable vessels to enter into the Mississippi into the lock, and, after the vessel had passed into the Mississippi to discharge the Mississippi water into channels outside of the canal, and thus allow it to make its escape to the sea without forming any deposit in the body of the canal.

By the CHAIRMAN:

Question. Give the dimensions of the canal.

Answer. The trunk of the canal is calculated to be 200 feet wide at the bottom, with a depth of about 30 feet. That would make it about 400 feet wide at the top—a slope of three to one.

By Mr. DAVIS:

Question. How are the sides protected from caving in?

Answer. It is believed with this slope the sides will maintain their slope, and not require anything except in places where they pass through sandy deposits, where a revetting of sheet-piling will be required.

Question. What tests have you made of the earth between the river and the Gulf?

Answer. Borings have been made to a depth of over 50 feet.

Question. What do you find?

Answer. We find an alluvial deposit entirely, the upper portion being a light alluvial, and the lower portion clay.

By Mr. DAVIS:

Question. Black clay?

Answer. No, sir; a blue clay—a bluish color. It is not exactly the blue clay of our Northern States, but approximates to that. Probably in the course of time it will become indurated sufficient to form a hard pan. It is a tough clay, but not very hard.

By the CHAIRMAN:

Question. How do you propose to protect the bottom of the canal?

Answer. No protection is thought to be necessary for the bottom. The depth of water would prevent any washing of the bottom of the canal.

By Mr. DAVIS:

Question. State the exact length between your locks, and how much water you would want on either side in the Gulf and in the river.

Answer. That I am hardly able to give, more than a general length of six miles. That is the nearest I can come to it. The water at the Gulf end of the canal will be over 30 feet.

By the CHAIRMAN:

Question. How far from your guard-lock will that depth of 30 feet be reached, or will it be at your guard-lock?

Answer. It will be at the guard-lock.

Question. How far out into the Gulf does that extend from the land?

Answer. That is indefinite. It increases from that.

Question. How far out from the present land will the guard-lock be situated?

Answer. It will be inside of Breton Island.

Question. How do you propose to protect the sides of this canal that extends out into the Gulf?

Answer. By jetties.

Question. What reason, if any, have you to believe that it will not fill up by a deposit of sand from the Gulf?

Answer. The direction of the littoral currents are such as to prevent any serious accumulations of deposit at the mouth of the canal, being at right angles to the direction of the exit, but what little accumulations would take place would be readily removed by use of a dredge, dredging once every three months or as circumstances might require.

Question. Do you know of any measurements having been taken through a series of years past, showing the deposits on this site?

Answer. Nothing more than a general statement that within the last one hundred years the depth of water has not changed at this place.

Question. From whom is that general statement obtained?

Answer. That is on the authority of Major Howell. It is from examination and surveys made.

By Mr. SHERMAN:

Question. What is the depth in the Mississippi?

Answer. At the exit of the canal it would be 30 feet, but it drops off rapidly from the termination to over a hundred feet. In the middle of the river it is over a hundred feet in depth.

By the CHAIRMAN:

Question. How do you expect to keep the river water clean between the Mississippi lock and the river?

Answer. By dredging. But there would be no circulation of water

much in this portion of the river, and of course there would be but little deposit. The main deposit that would occur would be directly at the entrance, where an eddy would be formed by the currents of the river; but it wouldn't be of any great extent, and would be easily removed by dredging at intervals.

Question. Is there anything in the formation of the river at that point to make this a desirable or undesirable locality over and above that of any other?

Answer. It is desirable for this reason: it insures the permanency of the banks; the river has a straight reach at this point; the current of the river is parallel with the shore, and the abrading action of the current would not amount to much if anything in this position.

Question. Do your estimates of cost contemplate any protection to the banks of the river in the locality of the dam, to prevent its washing out?

Answer. Yes, sir; it contemplates a protection.

Question. As to the roadstead on the other side, is it good or bad?

Answer. It is an excellent roadstead.

Question. How is it protected?

Answer. It is protected by Breton Island and a point of land from the southward. I forget the name of that point now.

Question. Is there any protection whatever at either of the three mouths of the Mississippi now?

Answer. There is no protection whatever.

By Mr. DAVIS:

Question. State as to the cost and time that would likely be required to complete the work.

Answer. The cost is estimated at \$7,500,000, and the time at three years. This latter is, however, affected by the amount of money appropriated each year.

Question. What is your estimate of the amount which should be appropriated each year to make it a success in the time you speak of, or the first, second, and third year?

Answer. Three million dollars are estimated for the first year's appropriation, and half of the remainder each succeeding year.

By the CHAIRMAN:

Question. That sum would enable you to work most economically, would it?

Answer. Yes, sir.

By Mr. CONOVER:

Question. How would the entrance to the canal compare in point of accessibility and safety to the present entrance to the river?

Answer. It would be much safer and would greatly facilitate the entrance of vessels to the river.

Question. How would it be safer?

Answer. An entrance would be made from a sheltered locality, and an insured depth of water will always be found at the mouth of the canal, whereas at the mouth of the river the entrances are exposed, and it is difficult to maintain a proper depth of water. Vessels are liable to be grounded on the bar, and in such positions they are helpless during periods of severe storms.

Question. You propose, then, to extend this canal beyond the bar, do you?

Answer. Yes, sir. There is no bar after deep water is reached at the end of the canal.

By Mr. DAVIS:

Question. State what would be the probable annual expense of keeping the canal in working order after being completed, and what the probable expense of the present system with 18 feet of water.

Answer. The expense of the present system is about \$200,000 a year.

By Mr. WEST:

Question. Do you embrace there the annual appropriation or the wear and tear?

Answer. The annual appropriation and the wear and tear; it includes everything; the renewal of the dredge-boats every five years. One hundred and fifty thousand dollars is the present annual appropriation.

Question. Then you must renew your dredge-boats every five years?

Answer. Yes, sir.

Question. You have two; what do they each cost?

Answer. About \$250,000 each.

Question. Then you have \$500,000 worth of dredge-boats to wear out every year, which gives you a hundred thousand dollars annual wear and tear?

Answer. Two hundred and fifty thousand dollars is the price of one dredge-boat every five years.

By Mr. DAVIS:

Question. The annual expense of your present system gives you how much water constantly?

Answer. Without interruption from blockades instituted by private parties, that would insure over 18 feet of water.

Question. How much over?

Answer. Between 18 and 19 feet of water.

Question. Now as to the cost annually to the canal of keeping it in condition and making it free to all vessels?

Answer. I am hardly able to answer that question.

Question. Approximate to it as near as you can.

Answer. I think about \$10,000 a year.

Question. That would cover all the expense?

Answer. Yes, sir; that would include the attendance of the locks and removal of material that would be deposited at the entrance of the canal.

Question. Your canal is suitable to pass the largest vessels, and it is supposed that they may meet each other in it?

Answer. Yes, sir; of a width sufficient to pass the largest vessels. It wouldn't, of course, pass the Great Eastern, but ordinary vessels engaged in mercantile service and ships of war; the largest we have.

By Mr. WEST:

Question. Would the operation of steam-power in the canal be any particular detriment to it?

Answer. I think not; the great width would obviate that.

Question. Now, contrasting the two methods, that of the jetties and that of the proposed canal, which would be the most easily defended from an enemy?

Answer. The canal. The canal would be capable of defense by permanent works, while the jetties would not admit of such defense.

Question. Independent of permanent works, under the protection of an iron-clad, wouldn't she lie to more advantage and be less exposed in this protected harbor than in the open roadstead at the mouth of the jetties?

Answer. She would be less exposed for the reason that she could take advantage of the islands lying outside of the anchorage.

Question. Do you say that an iron-clad would more effectually protect the mouth of the canal by reason of her lying under the protection of Breton Island or the other point of land there, than if she undertook to protect the mouth of the river lying in an open roadstead?

Answer. The advantages would be very much greater in a secluded harbor than they would be in an open roadstead, if for no other reason that the quiet of the waters would admit of accurate sighting of the guns. But in addition, the natural protection afforded by the coast would be very much in her favor.

Question. How would it be with reference to torpedo defense?

Answer. The quietness of the waters would be very much to the advantage of a torpedo defense over a defense of a similar nature in an open roadstead.

By Mr. SHERMAN:

Question. How do you propose to do this excavation and embankment?

Answer. By means of steam-dredges and steam-carriers to deposit the excavated material at a safe distance from the edge of the cut.

Question. Will the soil make an enduring embankment?

Answer. The soil will make an enduring bank.

Question. What is the formation of the bank, or does that depend on the amount of excavation? Is there any proposed width of the bank, top and bottom?

Answer. There is no proposed width of bank. It depends simply upon the amount of material excavated. The height might possibly be limited by the machines used to convey it.

Question. Will the excavation have to be carried beyond the reach of the machines at any place? Will it have to be again moved after being deposited on the bank?

Answer. It is not expected that the material will be moved twice.

By Mr. WEST:

Question. Do you propose to use the same process that they are using up here in the city dredging-works?

Answer. They use a simple dredge for dredging there.

Question. And then they have a carrier besides; is that your object?

Answer. Yes, sir.

By Mr. SHERMAN:

Question. After the earth is lifted by the dredging-boat, how do you carry it over far enough to be out of the way?

Answer. By means of derricks or an endless chain-carrier. This portion of the work will of course be done by contract.

Question. What objections are made by engineers to what is called the jettie system?

Answer. The want of permanency is the main objection. The improvement of rivers by a system of jetties has been tried in very many instances, and there are only two cases I think on record where they may be said to have been successful. One is at the mouth of the Danube and the other at the mouth of the Oder in Europe; but circum-

stances at these places are very different from what they are at the mouth of the Mississippi. In the case of the improvement at the mouth of the Danube, it has been found necessary to carry out the jetties year after year to secure the desired depth of water, and then but 18 feet of water could be maintained. At the mouth of the Oder the works have been more permanent; but in this case no sediment is carried down by the river. Deposits that occur at the ends of jetties are simply those that occur from the sand being washed along the coasts by the littoral currents.

Question. What difficulties are anticipated in closing the channels of the stream?

Answer. The secure character of the banks on either side of the river would prevent such a means of improvement as to render the formation of channels above the obstructions possible by the breaking through of the water.

Question. How does the material at the mouth of the present channel compare with the material through which you excavate to form the canal?

Answer. Being more recently deposited, it is less compact.

Question. From the best information you can get, when was the channel which you propose to excavate deposited in the formation of the delta of the Mississippi?

Answer. The present rate of progress on the channels at the mouth of the river is about a foot a day. That would be 370 feet a year.

Question. When was the ground that is now to be excavated deposited, as near as you can ascertain? How long has it been deposited?

Answer. Somewhere in the neighborhood of six hundred years.

Question. That is, provided the formation of the delta now is at the same rate of increase?

Answer. Yes, sir.

Question. Have you made such examination of the soil of the canal as will test the character of the earth to be removed?

Answer. My personal observation is not on the line of the proposed canal, but these five miles of the canal, Fort Jackson and Fort Saint Philip, the deposits being identical in both places, from all the information that I am able to obtain.

Captain HIRAM FOLLETT, pilot of the Mississippi River and steam-boat-master.

By the CHAIRMAN:

Question. Have you ever been connected with the Tow-Boat Association?

Answer. Yes, sir.

Question. In what capacity?

Answer. I have been a captain nine years.

Question. State what you know as to the mode of doing business of that association, with reference to the detention or facility of taking boats over the bar. In other words, whether, in any instance, it is to the interest of the association to put a boat on the bar?

Answer. Yes, sir; it is to the interest of the Tow-Boat Association to obstruct the bar, if there is an opposition boat; a small capitalist having a boat employed, it is their interest to blockade the bar and keep him from getting his vessel in or out, so that the association can tire the man out and get the vessel to tow at their rate. That is my experience in the matter. I have been there.

Question. Do you know of any order ever having been given by the authorities of that association for that purpose?

Answer. I have known of orders being given to masters managing at the bar to take possession of the bar; for the Tow-Boat Association to take possession of the bar, and also orders not to let the opposition tow-boat get anything in or out. That is, any individual or small capitalist.

Question. How would you prevent them from getting boats in or out?

Answer. That is the easiest thing in the world; by putting the ship out of the channel.

Question. Putting which ship out of the channel?

Answer. The ship I had charge of; the ship that the tow-boats had hold of. Give her a slew.

By Mr. CONOVER:

Question. You have received such instructions as that while in the employ of that company?

Answer. I didn't say so.

By the CHAIRMAN:

Question. How do you happen to do such work as that?

Answer. We have a manager at the bar, having a tow-boat that manages down there, and he gives the orders to the others, but that is the way of doing it.

By Mr. SHERMAN:

Question. I suppose you do not want a specific order to know what they want you to do; you take a wink?

Answer. We have a little interest ourselves—the masters do. We beat the owners once in a while. If we get a ship around there we want to keep one hanging around the bar, so that we are employed all of the year around. There are two sides to that question. If we keep the bar clear, and keep the ships running in and out, we are laid up and only get half pay, and have to walk around the streets.

By the CHAIRMAN:

Question. Didn't you take boats through by contract, and get the same pay for doing it whether the time was long or short?

Answer. Sometimes; that would be due to circumstances.

Question. If you didn't do it that way, how were you paid?

Answer. By contract; at so much a tide, so much per hour, so much per day, so much for the use of the hawser.

Question. I do not understand precisely yet how that affects competing tow-boat men. If you put your boat upon the bar, was not that against yourself rather more than against him?

Answer. No, sir.

Question. Why not?

Answer. We are able to wear him out. We don't care anything about him. We buy a boat here to-day for \$10,000, but make that concern lose a hundred thousand dollars before the fleet of ships gets out. They buy them all out of the way, or wear them out. If I had this boat and it is impossible for me to take a ship down, I could never get that ship out. I couldn't get down, and they would wear the captain of the vessel out, so that he would throw me aside and give the vessel to the association.

By Mr. CONOVER:

Question. Do you not know an instance where a tow-boat company made a demand on the captain of a vessel on the bar to surrender the vessel to the tow-boat company, when the same vessel was easily drawn off by Captain Freeman?

Answer. Yes, sir; I know of a circumstance where the bark Francesca was ashore between South Point and Southwest Pass, and the tow-boats went and looked at him, but would not take any action. They advised the managers in the city, and the managers told them to go and see if they could not get the captain of the bark to abandon her to the tow-boat association, and while they were doing that and talking around, Captain Freeman went out and got the vessel and pulled them off, and after I saw him get hold of her I went out in a boat myself, and he says, "Here is the vessel;" and we were glad to get her out right. We might have got a thousand dollars as easily as not, but we wanted it all. All we got was the towage.

By the CHAIRMAN:

Question. How long has this combination been in existence?

Answer. Since the 9th of December, 1867. It is broken up once in a while. They break it up just for a sham once in a while, to keep people from abroad from embarking in this affair. They say, "Well, there is nothing doing out there." That is to keep them from bringing boats out here.

Question. Where did you usually meet incoming ships?

Answer. Off South Point, about eight miles from the bar.

Question. What was the length of time required to tow an ordinary vessel from the point you met her to New Orleans?

Answer. That would be owing to circumstances.

Question. Are instances of the kind which you related in regard to the bark Francesca of common occurrence?

Answer. I have known of a good many instances of that character. I don't know anything about it before the war. I am only talking of what has come to my notice within the last ten years.

By the CHAIRMAN:

Question. This organization was in existence before 1867?

Answer. Yes, sir. The Government had charge of all the boats in 1863. This organization went into effect in 1867.

Question. Was there no combination among the tow-boat men before 1867?

Answer. Not since the war; before the war there was.

Question. How long did it last?

Answer. Five or six years, I think. They would break up once in a while. A man would come with an opposition boat, and they would buy him in.

By Mr. DAVIS:

Question. State the expense of towage before the war and now.

Answer. Tow-boats before the war were worth two-thirds more than what they are at the present day, and they carried one-half crew more, and they were of as much again power. Where one boat can tow two ships, they can tow four or five. It was owing to the tonnage of the ship; the larger the vessel, the lower the rate. That was before the war, as I say. Now it is the same thing all the way through, and small vessels pay a big rate, about a dollar and a half.

Question. For towing up, or the round trip?

Answer. No, sir; that is per ton up. I think it is \$1.30 for smaller vessels.

By Mr. DAVIS:

Question. What for down?

Answer. Forty cents.

A BYSTANDER. It was 40 cents, but it is now 25.

The WITNESS. It is against the tow-boat association—and I am speaking from what I know to be a fact—to have a canal, or to work Pass à l'Outre to keep it open. A vessel that can sail in over there don't require any tow-boat. She can sail up within twelve miles of the city almost within the day. These are facts that I know. It is against them, because they have not the conveniences at Pass à l'Outre that they have at Southwest Pass, in the shape of station-houses, and wharves, and telegraph-offices. Another cause is because a vessel can sail in over the pass and sail up to English Turn, or to the city, if the wind is fair.

Question. With a canal at Fort Saint Philip, couldn't these vessels come within twelve miles always of New Orleans, or to this English Turn?

Answer. Yes, sir; if the wind is fair.

Question. If vessels were once through the canal, would it be in the power of this combination then to drive off individuals?

Answer. No, sir; it is the bar. If you get them through the canal into the river, they can sail up or be towed up for a hundred dollars.

Question. The tow-boat association would have no power over it?

Answer. No, sir; they would be all split up, and the work would be done by small capitalists with no combination. The tow-boat company have no use for any canal.

By Mr. DAVIS:

Question. Do the tow-boat association have one price for towing up to New Orleans and another for towing across the bar and letting the ship sail up?

Answer. No, sir; they don't do that kind of business. They take you all the way through.

Question. Then they wouldn't pull you across the bar?

Answer. O, no, sir. You would be all right then if they would do that. Let me tell you another thing. If a small capitalist invests in a steamboat and comes down here and goes out for a ship, the tow-boat association orders four or five boats to follow him around and tow the ship up for nothing, sooner than let the small fish get it, and give the captain a hundred dollars, if he wants it, besides. If they make an arrangement to tow, they tow all the way up. They won't touch you unless you tow all the way through.

By Mr. CONOVER:

Question. You say the tug-boat company will not make a contract to tow a boat simply over the bar?

Answer. No, sir; they will not.

By Mr. DAVIS:

Question. You have been engaged with the tow-boat company?

Answer. Yes, sir.

Question. Do you know the cost per day of working a boat?

Answer. Yes, sir. I saw Mr. E. A. York at one end of the bar and

Mr. Peter Marcy at the other, and they formed a hollow square, and "burnt both ends of the candle," as the old saying is, and they kept that bar, I think, five days that way, and neither one would stir, and they closed it up completely. York was on the upper side and Marcy, I think, on the lower side, &c. I got York to go aboard of Marcy. The faculty were down there, Marcy and York, and I took them aboard, and they came to an agreement to clear the bar after lying there five days. They closed it, and I was one of the captains who did it.

By the CHAIRMAN:

Question. Who are York and Marcy?

Answer. Mr. Marcy is a big tow-boat man in New Orleans. E. A. York is the manager of the association. They had four boats apiece. They took vessels and dove-tailed them in the river, and just left a hollow square at the bar. They were then in opposition to each other.

By Mr. SHERMAN:

Question. When was this?

Answer. That was in 1866.

Question. Were those two men opposing tug-boat owners?

Answer. No, sir; they were tow-boat people. They were in opposition to each other.

Question. They were opposition tug-boat owners?

Answer. Yes, sir.

Question. This was for the purpose of preventing any boats from passing the bar?

Answer. No, sir; they just got sulky with each other, and they closed the business up. It wasn't to prevent anybody else, because they had their ships at the lower end of the bar and York had his at the upper end.

Question. Could any vessels pass during this?

Answer. No, sir, not one. They hauled the ship Montgomery up alongside and made fast. She couldn't get in.

Question. Was the purpose of this to prevent the passage of boats either way?

Answer. No, sir; it was just a fight between each other. One was trying to worry the other out.

Question. The boats of one were above and the other below?

Answer. Yes, sir. The purpose was to prevent York from going up and Marcy from going in.

Question. Did they afterward join ownership?

Answer. They joined in association some time afterward. They formed an association after that.

Question. Are they part of the present line?

Answer. Yes, sir; they are associated now.

Question. If a new tow-boat should be started in this navigation, what impediments or obstructions would be thrown in their way?

Answer. All; every obstruction. I want to make that strong.

Question. Every impediment that was possible?

Answer. Every impediment that was possible would be put in her way.

Question. Even to the obstruction of the navigation?

Answer. In the first place, they would put five or six boats there that were as fast as she was, and if she towed for 40 cents a ton, they would tow for 20. If she got a ship, and got her in on to the bar, they would obstruct it in every way they possibly could to prevent her get

ting her ship in. They would go to work and force her to take the vessels at such a low rate, she taking the vessels for spite. She takes them so low she cannot make any money, and they take the vessel to town, and the association lies around, and the next one who comes around they charge a dollar and a quarter. They let him go at a rate he cannot live at, and the next ship that comes along they take at full rates, and they force him into the association.

Question. How many tow-boats are there in the association?

Answer. Twenty-two.

Question. Are there any tow-boats now except those in the association.

Answer. No, sir; they are all little river harbor boats.

Question. They have, then, a monopoly of the business?

Answer. Yes, sir. Captains are afraid to employ others and take a small one-boat man, no matter how good his boat may be, and it might be better than the others, for fear that he might be in difficulty and they would tuck it on him and make him pay double.

Question. Have you had any difficulty with the tow-boat company?

Answer. No, sir. I resigned two or three times, and they asked me to come back again. I am employed by the Government at present—by Major Howell, of the United States Engineers:

By Mr. SHERMAN:

Question. You are an experienced captain. What would be a fair compensation for the towage of a vessel per ton, in your judgment, to make a fair legitimate business, such as you could live by, paying the interest on capital employed, and paying the labor. I mean the ordinary interest, such as prevails—8, 9, or 10 per cent.

Answer. I suppose vessels could be towed up here and down for 75 cents a ton, 50 cents up and 25 cents down, because ships come here very large, and they are very easy to tow. They are long; they do not displace much water, because their bottoms are small, and they do not load deep. They are easier to tow than smaller ones.

Question. Do you know what they charged for towage before the war?

Answer. I think it was 80 cents a ton up. I have forgotten that, however.

A BYSTANDER. I have been told it was 60 cents.

By Mr. SHERMAN, (to the witness:)

Question. You were not in the service then, I suppose?

Answer. Yes, sir.

Question. They charged less than they do now?

Answer. Oh yes, sir, and they had better boats then, also. Up to 18 feet it is a dollar and a quarter now, and after that it is a contract. They can charge you as much as they want to after that.

Question. Is not the navigation now much deeper over the passes than it was before the war?

Answer. About the same, I should judge.

Question. Did they ever keep the channel up to 18 feet until the recent dredging? Was the old channel 18 feet before the war?

Answer. At times, yes, sir. That would be owing to circumstances. High or low water has a great deal to do with it.

Questions. Did your channels fill up during the war?

Answer. No, sir.

Question. Were they dredged open?

Answer. We had so many steamships going in and out that they

couldn't close; their wheels were digging all the time. At that time General Butler had charge of this bar, and we had to go in the channel all the time; people had to go pretty straight. Those who got out of the channel went up here to Fort Jackson. We had a good bar. True, we didn't have ships going out drawing as big a draught of water, but we had them coming in drawing as big a draught. I was tow-boating here then.

Question. Would there be any practical difficulty, if the outlets were under the charge of a military officer, to keep these boats in their turn and order?

Answer. The mud-digger has this difficulty. All that the engineer department asks is for the tow-boats to tow their vessels in and out at high water, which is the proper time. The current is slack then, and the dredge-boat will work at low water, because when she is working she has more current, taking this sediment away to sea all the time. They do not pay any attention to the request. The officer down there will request the captain to hold up a certain length of time at low water, when there is no possible means of getting vessels in and out, and they get an order from the town here to go on with the work; that it don't make any odds about the dredging-machine. She will go to work and dig a channel 18 or 19 feet, pass in and out, and a ship passes in and out with a nice channel as high as 80 feet wide. A ship comes down here, tow-boats one on each side, and the ship will take a cant and go across the bar and stop the mud-digger. That is the reason that the mud-digger cannot get an opportunity to work. Nobody can dig anything out where you stop them. You have got to dig right through the ship.

Question. Then it is a contest whether or not at certain times the mud-digger holds the channel, and at other times the vessel?

Answer. The mud-digger will always get out of the way and give any assistance at all times, and is always ready to assist, and wants to work with the tow-boat association in every sense of the word. That is my experience. Captains of the tow-boats and captains of the mud-diggers are always on very good terms; but we don't know anything about what goes on up above. The mud-digger will go out and in, drawing 19 or 20 feet of water; and what is the reason a ship cannot go out there the same size that she is? They can easily enough.

By Mr. DAVIS:

Question. You say ships ought to pass here at high water?

Answer. Yes, sir.

Question. How long apart are those tides? How long would a ship have to wait?

Answer. In this country, when the sun is south of the equator, it is high water at night time, and when north, it is high water in the day time. They generally start in with a flood tide. We have about four hours good flood-tide, or five hours. That is the rising tide.

Question. How long would a vessel have to stay in or out to wait and go with the tide and not interfere with the dredge-boat?

Answer. I couldn't tell you that; that is owing to circumstances. She wouldn't have to wait more than three or four hours, because they commence getting under way generally about three hours before the tide falls, getting ready. The detention never is much.

Question. Three or four hours?

Answer. Two or three hours; yes, sir.

Question. How many tides are there a day?

.Answer. Sometimes two in twenty-four hours, and sometimes only one.

Question. When there is but one tide a day, would she have to wait but three or four hours?

Answer. About that.

Question. You spoke of the dredge-boat going through backward and forward?

Answer. Yes, sir. *

Question. Couldn't the tows follow the dredge-boat through?

Answer. Yes, sir, as well as she can follow her own track. They buoy it out and you cannot get out of the way. It is buoyed about thirty yards apart. She goes down to 19 feet sometimes. I have seen her go out drawing 19 feet. I have seen her cut through a 11-foot lump at 19 feet.

Question. When the dredge-boat goes in or out, and there are vessels ready to go in or out, what is the objection to the vessels following the dredge-boat through?

Answer. There is no objection.

Question. Do they do it?

Answer. No, sir.

Question. State whether or not a Government officer placed at the bar would be an advantage or disadvantage to the commerce; in other words, state whether boats could come in and out with more system and regularity if there was a Government officer placed there in charge of the pass.

Answer. That is exactly what they want, as they have at all other places in the world. You want system, and you never will manage to get vessels in and out without it. Where every one does as he chooses, even if there was the best kind of feeling between steamboat owners and everything else, you will always have a bad bar unless you have somebody down there to manage that bar, because one man is bound to try to get through the gate before the other man, no matter how good feeling there may be between them.

Question. Do you know the expense of one of the tow-boats per day, the entire cost to the company, including all that is on it and the coal—say the largest boat?

Answer. One hundred and ninety-two dollars and six cents, according to a calculation I have made on a liberal scale, would be the amount: Captain, \$5; pilot, \$3.33; engineer, \$4.50; second engineer, \$2.50; three firemen, \$5; two steerers, \$2.30; two deck-hands, \$2; cook, \$2; boy, 50 cents; mate, \$1.60; rations, \$11.83; 150 barrels coal, \$150; oil and tallow, \$1.50; total for twenty-four hours, \$192.06.

By Mr. DAVIS:

Question. How long does it take one of those tug-boats to tow a vessel in and out, if it could go right along; I mean from the city down and then bring one back?

Answer. She ought to do it in about thirty-six hours easy.

Question. In and out, do you mean?

Answer. Yes, sir; that is, unless it is some big ship requiring two boats.

Question. How many tons in small vessels can this tow-boat of which you have spoken take up?

Answer. Three 1,500-ton ships easy, and take four down, it taking her a little longer to do it. On a day like to-day she would take six. A first-class boat averages three ships up and four down. They make the

vessel pay 25 cents of her down towage when she comes up, to keep her from falling into the hands of any other party going down. They hold and claim that that is done so that the vessel cannot fall into the hands of anybody else.

By Mr. CONOVER :

Question. In other words, they make them pay for the round trip going up?

Answer. Yes, sir, to that extent; making them pay that amount in advance.

By Mr. DAVIS :

Question. How much would that boat earn in the thirty-six hours that you spoke of, in carrying vessels up and down ordinarily? I do not mean one select trip, but the ordinary trip.

Answer. She will make four or five thousand dollars easily enough.

Question. That is thirty-six hours; you gave us the expense of twenty-four hours.

Answer. You might say forty-eight hours, and then you will have plenty of room. The wind being ahead might make some obstruction.

By Mr. WEST :

Question. That is, forty-eight hours from the time she leaves the passes until she is back again?

Answer. Yes, sir; it will only take her thirteen, fourteen, or fifteen hours to come up, and about ten or twelve to go down.

By Mr. DAVIS :

Question. When you were with that company, had you any means of knowing how much they made each year; what their profits were?

Answer. No, sir; because the association is so fixed that you cannot find out very well, especially a captain who don't own any stock, and if he does he cannot find out then. But when I am running an opposition boat, I know what I can make.

Question. State that.

Answer. Thirty per cent. a year easily enough, because we run very differently from them. We don't have any managers or superintendents. All you want is a captain to each boat. All you have to do is to go out and get a ship and tow her to town, and get another one and tow her down. But now they manage that in the city. When there is opposition they have to send a man out to make money for them.

By Mr. CONOVER :

Question. You mean they make \$30 on \$100?

Answer. Yes, sir.

By Mr. DAVIS :

Question. How much water do the boats draw ordinarily?

Answer. From $4\frac{1}{2}$ feet to 12 feet. Some large propellers draw about 12, and some of the light side-wheel boats about 4 to $4\frac{1}{2}$.

Question. What proportion of the time are those tow-boats employed, and what portion of the time are they lying idle on the average?

Answer. The year round, I suppose, one-half is tied up and the other running, but they don't employ any captains or crew when they are laid up. They draw their proportional part of the money that is turned in from those that are running. Sometimes in the summer they are only running two boats. They run just enough to meet the demand.

Question. Have they sufficient boats for all seasons of the year and some idle?

Answer. That I don't know, sir. I know they are old boats, old blockade-runners and vessels sold out of the United States Navy, &c.

Question. What is the average cost of their boats?

Answer. They are worth about \$25,000 apiece. If you sold them now you could get but about \$9,000 apiece for them.

Question. You stated a moment ago that you formerly were employed by the tow-boat company, and are now employed by the Government, and that you had resigned. State what pay they gave you and what the Government pay you.

Answer. I got the same pay for going pilot that I did for going captain.

Question. What is that pay?

Answer. I believe it is \$5 a day.

Question. You were here before the war, during the war, and, of course, you have been here since the war. I wish to know whether there was as much water on the bar at the end of the war as there is to-day—whether as large vessels could go in and out?

Answer. Yes, sir; just the same. Everything is about the same, that I know of. I don't see much change any more than that the bar has made out forward and changed a little to the east and west, gone to sea farther. I don't see much difference as to the depth of the water.

Question. Do I understand that during the war there was no work done on the bar and no dredge-boats there?

Answer. There was not.

Question. That was four or five years, and since then there have been boats engaged; and since the war there is no difference in the depth of the water?

Answer. That I wouldn't like to say. I have towed then and towed since, but there is no doubt that there is more than there was then, but it isn't managed as well, because at that time they had to go in the channel, and they don't now. If you go down there to-day, you will find a ship 40, 50, or 80 feet out of the channel.

By Mr. WEST:

Question. During the war the channel off over the bar was kept free and a good draught of water on it by the constant transit of the United States transports and vessels?

Answer. Yes, sir; that is it exactly.

Question. Suppose when the war ceased, and commerce had relapsed to its present condition, the United States dredge-boats had not been employed to keep the channel open, could you have had as much water as you have now?

Answer. I don't think we would.

Question. Then how much benefit do you understand the employment of these United States dredge-boats to be, in the way of keeping the channel open?

Answer. They can cut lumps away. They have kept the channel perfectly straight, and it never was straight before.

Question. If those dredge boats were withdrawn and ceased to operate, what would be the effect on that channel, and how much would commerce be then obstructed?

Answer. Ships wouldn't get athwartships of the bar; there would be large lumps made up in the eddies, and finally it would become a breaker.

Question. Then the United States dredge-boats, at the present time, answer the same purpose that the constant transit of the vessels did during the war?

Answer. Yes, sir; and as a plow to cut and destroy those lumps, or wash them away.

By Mr. CONOVER:

Question. You think that, being rid of this tow-boat monopoly, and the obstructions which they place in the way of free navigation over the bar, that a vessel drawing 18 or 20 feet of water could come over the bar without difficulty with the use of the dredge-boats?

Answer. I believe if there were two boats like those two mud-diggers down there they could keep that channel open as easy as rolling off a log.

Question. Then you think the obstructions placed in the way by the tow-boat monopoly are great; that the disadvantage owing to the tow-boat monopoly is greater, indeed, than the bar itself?

Answer. Well, I don't want to be too hard on them.

NEW ORLEANS, LA., *December 31, 1873.*

Examination of General CYRUS BUSSEY:

General BUSSEY. Mr. Chairman, on behalf of the Cotton Exchange I have the honor to submit to you a brief report in print which contains substantially the argument we desire to make before the committee. We have no doubt that you have accumulated sufficiently all the information which it is in our power to give you from other sources, and do not wish to detain the committee with unnecessary statements, unless you have some questions to ask.

The report reads as follows:

NEW ORLEANS, LA., *December 29, 1873.*

To the Honorable Senate Committee on Transportation:

GENTLEMEN: Your investigation of the question of the necessity for cheap transportation and the improvement of the Mississippi River has no doubt placed in your possession much statistical matter bearing on the question; we therefore confine ourselves to the following table, showing the quantity of cotton exported from New Orleans for four years ending 31st August last, and the total crop raised for each year:

	Exports New Orleans. Bales.	Total crop. Bales.
Exported from New Orleans, to August 31, 1870.....	1, 185, 050	3, 114, 592
Exported from New Orleans, to August 31, 1871.....	1, 541, 359	4, 347, 206
Exported from New Orleans, to August 31, 1872.....	1, 087, 453	2, 974, 351
Exported from New Orleans, to August 31, 1873.....	1, 406, 026	3, 930, 508

The value of the cotton exported for the year ending 31st August, 1873—1,406,026 bales—is estimated to \$118,700,738.

The rate of freight on cotton exported from New Orleans during the past year ruled at $\frac{3}{4}$ d. to 1d. per pound, which is $\frac{3}{4}$ d. to $\frac{1}{4}$ d., equal to $\frac{1}{4}$ cent to 1 cent per pound more than vessels would charge if no obstructions existed at the mouth of the river. Vessels have been detained so often, and frequently for weeks, at great expense, that high rates of freight have to be charged to prevent loss. If we estimate the excess on 1,406,026 bales cotton, average weight 460 pounds, at $\frac{3}{4}$ d. or $\frac{1}{4}$ cent, we have \$3,233,859, which must be deducted from the value of the cotton, and borne by the producer.

Remove the obstructions at the mouth of the river, and make it possible for vessels of larger draught to enter our port without fear of detention, and tonnage sufficient for the wants of our commerce would seek this port, and take our cotton at $\frac{3}{4}$ d. or less per pound, enabling buyers to pay $\frac{1}{4}$ cent to 1 cent more in gold for cotton than at the

present rate. If we add to this the excessive rate charged on all other articles exported from New Orleans, (the trade in many of which is materially curtailed from this cause,) and make reasonable allowance for the losses sustained by merchants frequently having their cargoes detained for weeks on the bar, to the great inconvenience of all connected with the trade, we have a sum sufficient, now being borne, directly or indirectly, by the producers, merchants, and manufacturers of the Mississippi Valley and the North, each year, to construct the Fort Saint Philip Canal, and otherwise improve the navigation of the river between this port and Saint Louis.

Respectfully, your obedient servants,

CYRUS BUSSEY,
THOS. H. HUNT,
JOHN PHELPS,
J. B. LAFITTE,
J. I. NOBLE,
M. W. JOYCE,
HARRISON WATTS,

Committee New Orleans Cotton Exchange.

By Mr. DAVIS :

Question. Do you represent the Cotton Exchange ?

Answer. Yes, sir.

By Mr. SHERMAN :

Question. What expense are you put to in New Orleans for local charges in shipping cotton ?

Answer. Do you mean the expense of selling cotton in this market ?

Question. Yes, sir. What is your usual commission for selling cotton ?

Answer. The commission on cotton is $2\frac{1}{2}$ per cent.

Question. What does that cover ?

Answer. That covers the receiving, and selling, and advancing.

Question. Does that cover the charge of compressing ?

Answer. No, sir ; that is a separate charge.

By Mr. WEST :

Question. Does it cover brokerage ?

Answer. No, sir ; that is a quarter per cent. There is a brokerage of three-quarters per cent. paid to the broker who receives the cotton. The one-fourth per cent. of that is paid by the factor, and one-half per cent. by the buyer.

Question. Does the quarter per cent. paid by the factor come out of his commission of $2\frac{1}{2}$ per cent. ?

Answer. No, sir ; it does not.

Question. It is charged to the owner of the cotton ?

Answer. Yes, sir.

By Mr. SHERMAN :

Question. What is the aggregate charge to the producer ?

Answer. Two and three-quarters per cent. There is a charge of 75 cents a bale for weighage, storage, and including sixty days storage if necessary.

Question. Are those all the charges ?

Answer. Those are all the charges.

Question. Do you make advances on cotton ?

Answer. Yes, sir ; we are expected to be in condition to pay sight-drafts for about the full value of the cotton.

Question. What rate of interest do you charge for advances ?

Answer. The rules are 8 to 10 per cent., according to the condition of the money-market. Never more than 10 per cent. There is a large amount of money advanced to the planters by the merchants of this

city to make the crop, I should think, in the aggregate, amounting to twenty or thirty millions of dollars a year.

Question. What is the rate of interest for advances?

Answer. Usually 10 per cent.

Question. Is the money paid generally by English buyers here to you directly?

Answer. Yes, sir.

Question. Do they buy directly here?

Answer. Yes, sir; we have representative buyers in our markets from all markets in the world. We are selling cotton to-day to the Greeks, to France, Germany, Switzerland, Spain, England, and in fact all the markets of the world—to resident buyers who are here all the time.

Question. Do you charge commissions on advances besides the interest?

Answer. We never do.

Question. That is covered by your brokerage charge?

Answer. That is covered by the $2\frac{1}{2}$ per cent.

Question. The charges made to the shippers you do not know as much about, I suppose, as other gentlemen?

Answer. No, sir; I only know on general principles that the compressing is paid by the shipper, and is deducted and is paid according to the rate of freight.

Question. What is the charge for compressing?

Answer. I believe it amounts to from 50 cents to \$1 per bale, according to the rate of freight.

By the CHAIRMAN:

Question. Do you receive dispatches of the price of cotton abroad?

Answer. Yes, sir.

Question. Is that carried on on the same principle as the corn and wheat trade?

Answer. Yes, sir.

Question. In making purchases they deduct all cost of freight and compressing?

Answer. Yes, sir; the party gets an order here for five thousand bales of cotton, and he knows what he can afford to pay for it from Liverpool. His order tells him to buy so many bales of cotton at eightpence-halfpenny, laid down in Liverpool. He will calculate all the expense here, and the balance he can afford to pay for the cotton. It sustains the argument which I make in that report, that all the expense must first be provided for, and if freights are a penny a pound, it takes just that much off the cotton. If freights go down to a penny, we get that much more for the cotton here.

Question. I judge that the rule is to deduct the probable largest expense arising from the longest delay?

Answer. Yes, sir.

Question. So that although a vessel may go through promptly you really pay the most difficult capacity?

Answer. Yes, sir; and no doubt, as we have known from experience, vessels are deterred from coming here in consequence of a probability that they may be detained. We have frequently seen fleets on the bar here for weeks at a time.

By Mr. DAVIS:

Question. What proportion of your cotton is sold in New York and Liverpool of what you receive here?

Answer. I think it is safe to say that 95 per cent. of all the cotton received in New Orleans is exported to foreign countries.

Question. On the account of merchants here, or the New York merchants?

Answer. On orders from foreign countries. We do very little business with New York.

Question. What would be the cost of cotton from Memphis to come here and get on board ship? I mean the entire cost connected with it, including the freight from Memphis here, separating that from the other charges.

Answer. The morning paper states they are bringing cotton from Memphis at a dollar a bale to-day, which is less than a fourth of a cent a pound. There is no other cost to accrue on the cotton coming here to go to Liverpool over and above any other route. One dollar a bale is the rate of freight now by steamer from Memphis to this port.

Question. Sum up all the charges after it arrives here on the wharf until it is placed on board of the vessel, and she is ready to depart.

Answer. Cotton coming from Memphis here is generally compressed, and there is no other charge. Cotton can come here from Memphis and go right on to a ship without any charge, unless it is 15 cents a bale drayage. A fourth of a cent a pound will cover the whole of it.

Question. Take cotton that is not compressed at Memphis; take some other point on the river?

Answer. The expense would be no greater except the cost of compressing. They receive the cotton from the steamer on the river, haul it to the compress and compress it and haul it to the ship without any charge, except their charge for compressing.

Question. What is their charge?

Answer. From 50 cents to a dollar a bale, according to the rate of freight charged.

Question. You stated there was $2\frac{1}{2}$ per cent.?

Answer. That would not occur on cotton coming from Memphis to be shipped here. For instance, a party in this city can buy a thousand bales of cotton in Memphis, have it shipped here and reshipped to Liverpool without any expense.

Question. What will it cost the producer from the time it strikes the river until it leaves here for the foreign port; give the total expense per pound?

Answer. Take a lot of cotton from a plantation shipped to New Orleans or to Memphis, and from Memphis here for sale, and the total expense will average about a cent and a quarter per pound. That includes freight, commissions, storage, weighing, drayage, and labor.

By Mr. WEST:

Question. It includes insurance also?

Answer. Yes, sir; about $1\frac{1}{4}$ cents per pound.

By Mr. SHERMAN:

Question. Is that the difference between the price of cotton here on shipboard from the up-country and the price at Liverpool, about a cent and a quarter a pound?

Answer. It is intended to be just about that difference, of a cent and a quarter a pound.

Question. That covers the freight and all?

Answer. Yes, sir; all expense from the plantation here.

By Mr. WEST :

Question. Would not that charge vary very much in accordance with the valuation of the cotton? If it is a cent and a quarter at 13, what would it be at 21?

Answer. At 20 cents the expense would be a cent and a half a pound. I am taking it from the Mississippi and Memphis. If it comes from a tributary where a higher rate has to be charged, the expense is higher and would amount to 2 cents a pound, where \$4 a bale has to be paid for freight, for instance.

By the CHAIRMAN :

Question. About what proportion do you receive by water and by rail?

Answer. About four-fifths of the crop of cotton is received here by steamboats.

Question. What is the difference in the charges on cotton from Memphis, and an equal distance in the country by rail?

Answer. They are about the same; they run in competition with each other. They carry cotton by rail from Memphis here for a dollar and a quarter a bale.

Question. Does that come compressed?

Answer. Sometimes it is compressed and sometimes without compressing; they carry it either way.

By Mr. SHERMAN :

Question. Have they adopted the system of barge transportation for cotton?

Answer. There has been some cotton brought here this season by barges at a lower rate of freight, and we have recently believed that it can be made successful.

Question. Have you any objection to that system?

Answer. Not at all.

Question. Does it not lessen the rate of insurance somewhat?

Answer. There has been no discrimination made in insurance, but if we had iron barges it undoubtedly would lessen the rate of insurance. We have agitated the question of iron barges here, but have not succeeded in getting them in operation.

Question. I see large cargoes of cotton landed from the steamers on the levee; are they not very much exposed to danger by fire?

Answer. It would appear so from observation, but experience proves that it is not hazardous. Very few cargoes are destroyed.

Question. What is the rate of insurance coming from Memphis here?

Answer. Three-quarters of one per cent.

Question. How many days is it in coming from Memphis here?

Answer. Usually about four days.

Question. Is not that a very heavy rate of insurance for four days?

Answer. Well, sir, cotton is exposed, and sometimes frequently for a week or two weeks at a time is liable to be tied up. The river has been in bad condition, and it is regarded as low a rate as insurance companies can afford.

Question. Does that cover the marine-risk, as well as the risk by fire?

Answer. Yes, sir. Even after the cotton is discharged on the wharf, if it should burn up it would be paid by the insurance companies.

By Mr. DAVIS :

Question. Is there any difficulty attending the receiving and shipment of cotton this year that ought to be remedied?

Answer. It would be a pretty long story to go into all the evils that are complained of here.

Question. I did not intend to elicit a long story, but if there are difficulties, we should like to know what they are.

Answer. The principal difficulties are those connected with the mouth of the river, and the necessity for the use of tow-boats to bring vessels here, and the very high rates which are charged. That causes these port-charges on sailing-vessels to be higher than they ought to be. We ought to have such improvements as would enable us to get vessels from the mouth of the river here for a great deal less money than is now being paid.

Question. Is there any other difficulty; anything connected with the town, with the wharf-system here, or the movements in town?

Answer. Nothing that I think of that is necessary to refer to at present.

By Mr. WEST:

Question. How are the landing facilities here, as provided by the municipal authorities?

Answer. Well, sir, we have a pretty good wharf, but it needs to be enlarged and repaired.

Question. Is the system expensive to keep up and maintain?

Answer. It is very expensive.

Question. Are the revenues derived from wharfage appropriated to any other purpose than their maintenance and repair?

Answer. I believe they are used in the general budget for whatever expenses the city has, and they are not set apart exclusively for the repairs of the wharves.

By Mr. DAVIS:

Question. They are not?

Answer. I think not.

Mr. WEST. That is General Bussey's belief; I know that they are.

Mr. BUSSEY. Oh, I do not profess to be authority on the subject.

By Mr. SHERMAN:

Question. Is there any complaint made about their being excessive?

Answer. There has been complaint. There is a complaint of that kind.

Question. What would be the wharf-charges on such a vessel as the Robert E. Lee, lying at the landing, loaded with cotton?

Answer. I do not believe that I can answer that question.

Question. You do not know how much per ton?

Answer. No, sir.

Mr. WEST. As we are upon this question of wharfage, and there is something of a conflict of opinion, I would like to ask Mr. Kennard a question. (To Judge Kennard.) State whether you are aware of the appropriation of the revenues derived from the wharves; for what purpose is the money used?

Judge KENNARD. My understanding is that they are used exclusively for the keeping of the wharves in repair, and that the revenue derived from wharfage is not a source of revenue to the city generally.

By Mr. SHERMAN:

Question. Is that by law or custom?

Answer. I believe by law. I would not be positive as to that, but that is the uniform custom. If the fund is diverted from that purpose, it is an illegal diversion.

By Mr. DAVIS:

Question. Is the fund deposited to a particular credit, or to the State, or city credit generally?

Answer. It has nothing to do with the State at all. It is deposited to the credit of the city. Whether there are ear-marks on that particular fund, I am not able to say. Unfortunately there is a little looseness in that matter.

By Mr. SHEERMAN:

Question. Can you say whether the rates which have been given us for wharfage are, or are not, sufficient to pay the ordinary current repairs of the wharf?

Answer. I think they are not. The case of New Orleans is a very exceptional one, so far as the expense of keeping up the wharves is concerned, and it is unfair to make a comparison between New Orleans and any other city of importance in the United States that I know of on that subject. We have constantly to extend the wharves; owing to the accretions from time to time, and the decay is more rapid in this climate than in the North. The repairs are one of the heaviest taxes we have. They are very heavy.

Capt. A. K. MILLER recalled.

Examination by Judge KENNARD:

Mr. KENNARD. I merely wish to complete evidence which was commenced the other day with reference to this bonded warehouse matter. It was stated in the testimony the last time the committee met that an application had been made by Mr. Weeks, who is the agent of the Mississippi and Dominion Line of steamers, to the Secretary of the Treasury for a permit to establish a general-order bonded warehouse. That application was approved by the Secretary of the Treasury, and I offer copies of the documents that were received, and also the original document from the Secretary of the Treasury.

NEW ORLEANS, LA., *November 1, 1873.*

SIR: I have the honor to request permission to bond the premises known as "The Mississippi and Dominion Steamship Warehouse," No. 748 to 754 Tchoupitoulas street, between Jackson and Philip, fourth district, city of New Orleans, to be a bonded warehouse under class 3, for the purpose of facilitating the discharge of steamers of said line under general order, free of expense to consignees, in such sum as you may deem proper to secure the revenue, and herewith inclose proper insurance certificate as to the fitness of the building sought to be bonded as a warehouse.

Very respectfully,

HON. SECRETARY OF THE TREASURY,
Washington, D. C.

TREASURY DEPARTMENT,
Washington, D. C., November 13, 1873.

I have received your letter of the 8th instant inclosing the application of Silas Weeks, and the requisite certificates, for permission to bond the premises known as the "Mississippi and Dominion Warehouse," No. 748 to 754, Tchoupitoulas street, in the city of New Orleans, La.; the same being a brick dwelling, 84 by 88 feet, as a warehouse, class 3, for the storage of dutiable merchandise in bond.

In reply thereto, you are respectfully informed that the application is approved.

You are hereby authorized to take proper bond, in duplicate, in such sum as will secure the revenue, and transmit the same for the consideration of the Department.

The requisite blanks are herewith inclosed.

I am, very respectfully,

WM. A. RICHARDSON,
Secretary.

JAMES T. CASEY, Esq.,
Collector of Customs, New Orleans, La.

The bond required, Captain Weeks informed me, has been furnished. He will testify as to that himself. He alleges that he has not been able to avail himself of this privilege derived from the Secretary of the Treasury by reason of the intervention of the deputy-collector of this port.

Examination of Captain MILLER :

Question. Is there any necessity that parties shipping goods by a line of steamers that own one of these general-order bonded warehouses should store those goods in that warehouse ?

Answer. Do you mean the necessity on the part of the consignee of storing in the warehouse owned by the steamer ?

Question. Yes, sir.

Answer. I do not know that there is any necessity for storing in that particular warehouse more than any other.

Question. I want to know whether there is in that particular warehouse ?

Answer. The warehouse being opposite or near by the ship insures the safety of the goods by protection from weather and from stealage, and they have the privilege of allowing them to remain three days free of any charge, which would enable them in the meantime to pass the necessary entries, &c. The warehouse, as it were, becomes a part of the ship.

Question. Is there any restriction upon the choice that the consignee might see fit to make by reason of this line of steamships having a bonded warehouse ? In other words, is there any compulsion as to storage in that particular warehouse ?

Answer. In the particular bonded warehouse of the ship do you mean ?

Question. Yes, sir.

Answer. Well, I cannot say for myself, never having owned a warehouse for our steamers. I have none, and I have none in view at present.

Question. Would, or not, a consignee within the three days that the freight is allowed to remain free of charge in such a warehouse be at liberty to remove it to any other warehouse of his choice ?

Answer. Yes, sir ; my impression is that he would. Of course, providing his duties are paid, and he satisfies the customs requirements.

Question. What is necessary to complete the right of this line of steamers, as you understand, from a knowledge of the commercial business of this city—the right which is accorded this company by the letter which you have heard read from the Secretary of the Treasury ?

Answer. The privilege of a general order.

Question. By whom can that be granted alone ?

Answer. I presume by the Department at Washington, or the authorities here by instructions from Washington.

Question. Are there any advantages connected with having a warehouse near the place where the ship lands ?

Answer. Yes, sir ; a great advantage.

Question. Please state what.

Answer. We have at this port no protection for goods upon the levee after they are landed excepting from tarpaulins, which are very insufficient, especially during heavy rains, where we have wind. Sometimes they get blown off in the night ; the hot sun also damages goods. If they are immediately run into a warehouse from the ship's side all that difficulty is avoided. We are able to lock them up at night, and watch

them much better. It also clears the wharf, and enables the ship to have more room to discharge and receive her cargo. With steamers we sometimes are discharging and loading at the same time. It blocks our wharf very much if we are compelled to land everything on the wharf.

Question. How many general-order bonded warehouses are there in New Orleans?

Answer. I really could not say. I am not familiar enough with the number to state. At present I do not know, of my own knowledge, of but two.

Question. Who are the owners of those?

Answer. One is owned by Mr. Chambréésy. The other is the Government warehouse—what they call No. 6.

Question. Who is the owner of that?

Answer. I could not say. The only private individual warehouse that I know of is Mr. Chambréésy's.

Question. Is there or not a saving of drayage by reason of the warehouse being close to the landing?

Answer. I should say there was. Never having had these drayage bills to pay, I could not say positively. I know, as applied to the other goods, the drayage is governed by the distance. Those are bonded drays which do this hauling, and we do not control them.

Question. Is there any saving of loss from breakage and stealage by reason of having the wharves near the landing?

Answer. Yes, sir; for the reason that we have the goods immediately under the eye of the steamship agent, or his employés. Where they are hauled a long distance they are subject to damage occasionally by going over the pavements and by reason of rain. I have in some instances myself had controversies with consignees through goods being damaged during the rain, not being properly covered on the passage from the ship to the warehouse, where the steamer has laid a long distance from it.

Capt. SILAS WEEKS, recalled.

By Judge KENNARD.

Question. You are the agent of the Mississippi and Dominion Line of steamers?

Answer. I am.

Question. You are the party who made this application to the Secretary of the Treasury?

Answer. Yes, sir.

Question. Have you furnished the bond required by the letter which has been heretofore read to the committee?

Answer. I have.

Question. What stands in the way of your perfecting the arrangement that you have proposed to make?

Answer. Getting permission from the collector of the port is all that stands in the way.

Question. Have you made application for that permission?

Answer. Yes, sir; a number of times.

Question. Have you been refused?

Answer. Yes, sir; on this ground, that we would have to wait until the collector returned. The deputy collector has told us that it was not in his power.

Question. How long has it been since you made your first application?

Answer. About two months ago. It was at the time that we got the warehouse bond.

Question. Has your warehouse been of any avail to you since?

Answer. It has not. It has been closed.

Question. What is the cause of that?

Answer. By not having the general order given us, as our application called for.

Question. How many general-order bonded warehouses are there in the city of New Orleans?

Answer. I am aware of only one.

Question. You only know of one?

Answer. That is all, sir.

Question. Who is the owner of that?

Answer. I could not say. It is No. 6 warehouse.

Question. Under whose management and direction is it?

Answer. I presume it is under the direction of the custom-house here.

Question. Do you know of any private parties interested in it?

Answer. I do not.

Question. When this permit has been perfected and your house is open, do you have any such control over the goods which you bring to this port as to compel their storage in your warehouse?

Answer. No, sir; we put it into our warehouse, and it can remain there three days, free of all charges. If the consignee of the goods thinks proper to take them out, he is at liberty to do so without charge.

Question. After three days they pay what?

Answer. A month's storage.

Question. Are there any advantages connected with drayage by reason of the warehouse being close to your landing?

Answer. Yes, sir; there would be no drayage.

Question. What are the advantages in the way of facilitating the commerce of the place; does it expedite your unloading?

Answer. Yes, sir; if we could commence work as soon as the ship was entered at the custom-house, although we can do that now. We have that privilege. But it has cost us something to pay for that drayage. As a general thing we have paid from a hundred to a hundred and fifty dollars to the party who has the control of the warehouse for drayage, until within the last two or three ships.

Question. What additional delay is occasioned by your not having a general-order bonded warehouse; is there any delay resulting from your not having said general-order bonded warehouse under your own control?

Answer. No, sir; I do not know as there is delay so long as warehouse people take their goods away as fast as we put them up, but still it discommodes many of the merchants to have their goods go to the general-order warehouse.

Question. In a word, will it cost the consignor or the consignee of any goods coming by your steamers more to pass through your warehouse than through any other in the city?

Answer. It would not.

Question. Have you any particular case in which you have suffered inconvenience? Do you remember the case of the steamer Texas?

Answer. Yes, sir.

Question. State to the committee what happened with reference to her.

Answer. When she was libeled the goods had to go into general order by the order of the United States marshal. If our steamer could have been put up alongside of our warehouse we could have put it into

our own warehouse free of all charge; that is, free of the cost of drayage and such like charges. Of course, if it remained there after a certain length of time there would be the storage only on it.

Question. Where did the goods go on the Texas?

Answer. Part into No. 6 warehouse, and they gave their bonds on part, and took them from the levee. But a great portion went in No. 6 warehouse, I believe.

By Mr. SHERMAN:

Question. Where is No. 6 warehouse located?

Answer. It is on the corner of Julia and Front Levee street, or somewhere; I do not know exactly where it is.

Question. Near the wharves?

Answer. Yes, sir; it is down near the levee.

Question. What effect do these delays have upon the western import trade?

Answer. I think they have a great deal.

Question. State in what respect.

Answer. The difference of drayage between the ships and warehouse. I think the custom here does permit western produce to remain on the levee a certain length of time.

Question. In what way would the western import trade be facilitated through New Orleans by the granting of this privilege to your line and to other lines of steamers?

Answer. It would be a privilege that they would have through bills of lading to the West.

Question. Would there be any loss of revenue to the Government?

Answer. None whatever, that I am aware of.

By Mr. DAVIS:

Question. What expense attends the goods coming to No. 6 warehouse before the merchant gets them, that would not occur on the goods going to your warehouse?

Answer. I am not aware what expense there would be. I do not know whether they charge drayage or not. I am not aware what charges they have.

Question. You do not know the cost?

Answer. No, sir; I do not. If it went into our warehouse it would be free of drayage.

Question. Is there any other reason assigned for not carrying out the order of the Secretary of the Treasury, than that the collector of the port was not here?

Answer. Yes, sir; it rested with that collector of the port to appoint whom he thought proper—to appoint what warehouse he thought proper as a general-order warehouse.

Question. You applied to the deputy collector?

Answer. Yes, sir.

Question. You applied to him to carry out the order of the Secretary of the Treasury, after having given the bond?

Answer. Yes, sir.

Question. What was your answer?

Answer. It was, for me to wait until the collector came, and then we would see what could be given.

Question. You have stated that you applied several times?

Answer. Yes, sir.

Question. Was that the answer each time?

Answer. Yes, sir.

By Mr. CONOVER :

Question. How many times did you apply ?

Answer. As many as three or four times.

By Mr. DAVIS :

Question. Did the deputy collector tell you when he thought the collector would be here ?

Answer. He did.

Question. When did he say ?

Answer. At different times. Each time had a different date. When I first made my application he thought that the collector would be here in ten or fifteen days.

By Mr. CONOVER :

Question. Is the collector generally here ?

Answer. He has not been here for some time ; how long, I cannot say exactly. He has not been here for the last two or three months.

By Mr. DAVIS :

Question. Do you know what proportion of the time the collector lives here, or stays away ?

Answer. I do not.

Question. Who is the deputy collector ?

Answer. Mr. Herwig.

Question. Do you know whether any one connected with the deputy collector has an interest in either of the warehouses ?

Answer. I am told that Mr. Herwig's brother has an interest in the warehouse.

Question. What warehouse ?

Answer. No. 6.

By Mr. CONOVER :

Question. Do you know that ?

Answer. I do not know it to be the fact. I am told so.

By Mr. DAVIS :

Question. Is No. 6 warehouse the one that the goods here are generally sent to ?

Answer. Yes, sir.

By Mr. WEST :

Question. Unclaimed goods put into your warehouse, if you had the privileges there of general order, would pay no drayage, you say ?

Answer. No, sir.

Question. When they were entered, at the expiration of three days, and the merchant entering them desired to put them in some other bonded warehouse, would you charge storage ?

Answer. Nothing whatever.

Question. When you made your application to the collector for a bonded warehouse, under this authority from the Secretary of the Treasury, did he offer to give you the privilege of a bonded warehouse, exclusive of the general-order privileges ?

Answer. He did, sir.

By Mr. DAVIS :

Question. What advantage would it be to you and the merchants here to have the goods go into your warehouse ?

Answer. It would be a great advantage to us. We seldom have a

ship come in here but we have more or less claims to pay on goods after they leave the levee to go to the general-order warehouse, either by damage, breakage, or in some other form. We have now two suits on hand in relation to goods that were in perfect order when they left the levee, but were in bad condition when the merchant received them at his store.

Question. They held you liable for that?

Answer. Yes, sir; for we get no receipt whatever. When it goes to a general warehouse we cannot get any receipt, and we cannot produce a receipt in court to show in what condition the goods were delivered from the ship.

Question. Have you ever lost any goods in any way for which you had to pay after you landed them on the wharf?

Answer. No, sir; I do not know as we have lost any goods, but we have had to pay damages for breakage.

Question. Did you build the warehouse that you at present occupy?

Answer. No, sir; we bought it built and put repairs on it.

Question. For what purpose did you buy it?

Answer. For a general-order warehouse of class three.

Question. Had you any assurance before you bought it that you could get a general-order warehouse?

Answer. No, sir. I thought we would be allowed the same privileges that were allowed in New York or elsewhere.

Question. The same privileges that were allowed in other ports?

Answer. Yes, sir.

Question. The cause of your company buying the warehouse was, that you believed it would facilitate your business and the business of the merchants here?

Answer. Yes, sir; a great deal.

Question. How long have you owned it?

Answer. About four months; between four and five months.

By Judge KENNARD:

Question. Did I understand you to say that when you deliver goods from shipboard in this general-order bonded warehouse No. 6, that you get no receipt?

Answer. We get no receipt. The custom-house officer gets a receipt.

Question. You have no receipt showing the condition in which they were delivered?

Answer. No, sir; it is the custom-house sends the goods.

Question. Do you give a receipt—if they are delivered in your bonded warehouse, would you give a receipt showing the condition in which they are received?

Answer. We have no one to give the receipt to, if it goes in under general order.

Question. What difficulties arise with reference to the damage? Where damage occurs to goods how do you make proof of it?

Answer. We cannot make proof, sir.

Judge KENNARD. I merely wanted to call the attention of the committee to the fact that it is a very difficult thing to prove damage occurring where the goods are delivered in this bonded warehouse, for the reason that they do not give any receipt showing in what order they are delivered. If they are delivered in the company's warehouse the company are responsible.

Captain WEEKS. If it went into our own warehouse it would prove either that the ship or the warehouse damaged the goods; that they

were damaged while in the hands of the company; that is, other ways than sea-damage.

By Mr. SHERMAN:

Question. Would you distinguish between the damage done before the goods leave your possession and while they are in the possession of the Government warehouse?

Answer. No, sir.

By Mr. WEST:

Question. You could tell if they were sea-damaged?

Answer. O, yes. We have a port-warden who inspects every package.

Question. Or, you could tell whether they were what is called stowage-damaged?

Answer. Yes, sir.

Question. But whether there had been pilfering or barratry on the ship; that, of course, you could not tell?

Answer. No, sir; of course, when they leave the levee in bad condition, we take note of it.

Question. Then you do scrutinize the order in which the goods are before they go from your ship to the general warehouse, and endeavor to protect yourselves in that way?

Answer. Yes, sir.

Senator WEST. Before Mr. Herwig proceeds to answer any questions, I will say that he has submitted to me the rules that influenced his conduct in the matter, and I briefly submit them to the committee, so that they can be placed on the record. They read as follows. From the revised custom-house regulations, part 5, Treasury Department, October, 1868, now controlling the action of custom-house officers:

Article 4, class 3. Warehouses of this class shall be used solely for the storage of warehoused goods, or unclaimed and seized goods, when ordered by the collector, and shall consist of an entire building.

Under this regulation it would be perfectly competent for the collector to designate this warehouse that Captain Weeks desires as a general-order warehouse, but the usage of the port of New York after the very much prolonged controversy, that gentlemen here are aware of, on the general-order system, had been established under date of March 9, 1872, and had been approved by the Secretary of the Treasury, and is considered the guide under which the collector here acts, there is a special prohibition in those regulations, which have been approved by the Secretary of the Treasury, against granting any such privilege to a warehouse that is owned by a steamship company or by steamship agents. I read from the regulations:

In addition to the warehouses hereinbefore designated, the agents of each line of steamships regularly plying between this port and any foreign port, will be permitted to designate any bonded warehouse of class 3, situated in the district in which their vessels regularly land, as the warehouse to which all unclaimed goods arriving by their vessels respectively will be sent, but no such warehouses will be approved in the control or management of which any steamship company or agent has any interest.

Therefore, it would seem, under these regulations, that the collector is acting entirely in accordance with those rules.

On the 7th of July, 1873, the following petition was addressed, by a large number of merchants here, among whom I recognize the leading importers of this port. It reads as follows:

The undersigned respectively indorse bonded warehouse No. 6, class 3, on account of its location, security, and general facilities afforded us, and we know of no reason whatever why they should not continue to receive the general-order business of this port as heretofore.

That petition, in addition to being signed as I have stated, by all these leading merchants, bears the signature of Capt. Silas Weeks and A. K. Miller and Company. Here is also a supplemental petition :

We, the undersigned importers, respectfully request that merchandise consigned to us by lines of steamships landing in the third diistrict be ordered to the United States warehouse No. 6, class 3.

That is signed by a number also of the leading importers. I have made this statement simply in justice to the deputy collector of the port, who submitted his action to me, and I have communicated it to the committee. He is here, himself, to answer any questions which may be propounded.

Examination of P. T. HERWIG, special deputy collector of the port of New Orleans.

By Mr. SHERMAN :

Question. I would like to have you explain the reason which induced you not to carry out the order of the Secretary of the Treasury, and whether you have communicated your action in the matter to the Secretary.

Answer. It was the custom some time ago that when steamers or vessels would land here, the owners of the goods had the privilege of letting their goods remain there forty-eight hours, in order to give them an opportunity to make their entries. In making an entry, the importer is allowed the privilege of designating any warehouse that he desires. In fact, the collector cannot refuse that permission. I have here a blank regulation form of warehouse entry. The order is indorsed on the back of it, "I request that the merchandise now entered by me to be warehoused as described in the within entry, by such a steamer or vessel, from such a place, may be deposited in the store No. —, — street, and I do here constitute and appoint —, —, as agent." It was deemed a hardship to keep the goods on the wharf, because it delayed the merchant; that is, it delayed the steamships from receiving their cargo, because the wharf would be loaded. It was also a great risk to have a large amount of goods on the wharves, because they were sometimes in a bad condition. It has been known where an entire wharf has sunk right into the river, and it would be too great a risk for the Government to leave a large amount of goods where the duty had not been collected. Parties desiring to ship goods have the privilege of making what they call an impost-entry, or they have the privilege of transporting under transportation-bonds. The inspectors are always requested, and even ordered, to let these goods remain as long as possible, in order to avoid any unnecessary expense. Sometimes steamboats go there and they take the goods right from the wharf.

Now, in relation to the affair of Captain Weeks: He made an application for a bonded warehouse. The letter was written by the corresponding clerk, under my directions, and I told him to make a favorable report, which was done. The original application of Captain Weeks went on with my favorable endorsement, as I say. Here is the answer.

TREASURY DEPARTMENT, *November 13, 1873.*

SIR: I have received your letter of the 18th instant, inclosing the application of Silas Weeks, and the requisite certificates, for permission to bond the premises known as the

"Mississippi and Dominion Warehouse," Nos. 748 to 754 Tchoupitoulas street, in the city of New Orleans, La., the same being a brick building, 84 by 88 feet, as a warehouse, class 3, for the storage of dutiable merchandise in bond.

In reply thereto, you are respectfully informed that the application is approved. You are hereby authorized to take proper bond in duplicate in such sum as will secure the revenue, and transmit the same for the consideration of the Department. The requisite blanks are herewith inclosed.

I am, very respectfully,

WM. A. RICHARDSON,
Secretary.

JAMES F. CASEY, Esq.,
Collector of Customs, New Orleans, La.

TREASURY DEPARTMENT, November 24, 1873.

SIR: I have received the bond of Silas Weeks, in duplicate, transmitted with your letter of the 18th instant, for constituting the premises known as "the Mississippi and Dominion Warehouse," Nos. 748 to 754 Tchoupitoulas street, New Orleans, accepted by Department letter of the 13th instant as a warehouse, class 3, for the storage of dutiable merchandise in bond, and hereby approve the same.

One copy of the bond is herewith returned, to be placed on the files of your office.

I am, very respectfully,

WM. A. RICHARDSON,
Secretary.

JAMES F. CASEY, Esq.,
Collector of Customs, New Orleans, La.

After the letter came back approving the bonded warehouse, Captain Weeks was notified of the fact, and he, of course, furnished his bond in accordance with the regulations, and the bond was immediately forwarded.

[The reply has heretofore been read in the course of to-day's proceedings before this committee.]

It will be observed that this was not general orders or unclaimed. Under this letter I had no power of granting him the privilege of the general orders coming by his vessel.

By Mr. SHERMAN:

Question. You regard the last letter as authority to establish a general warehouse, but not a warehouse for uncalled or unclaimed goods?

Answer. That is it, sir. It is very positive in the letter, as it reads for the storage of goods dutiable.

Question. Have these regulations, read by General West, been communicated to you from the Treasury Department for your regulation?

Answer. Those are sent to us by the Treasury Department as our guide.

Question. Was that book which was read from the book sent to you?

Answer. Yes, sir; we have one for each office.

By Mr. WEST:

Question. I read from both the books; are they both sent to you by the Department for your guidance?

Answer. Yes, sir; each deputy collector has one; the warehouse superintendent has one.

By Mr. SHERMAN:

Question. Do you know the reasons that influenced the Department in declining the privilege of warehousing unclaimed goods to shipping companies?

Answer. I think I do.

Question. Please state them briefly.

Answer. It was considered one of the wisest provisions of that law, for this reason: that because having an interest in a steamship, or being

the agent of a steamship, they oftentimes have goods consigned to them or to their company for transportation, and it is somewhat incompatible to receive goods by the steamship of which he may be an owner, agent, or be interested in, to store it in his own warehouse which is nearly under his control. There is simply a government officer there—one store-keeper. It was in order to prevent any fraud or collusion. But I desire to state to the Senators that of course I feel perfectly satisfied. If it was a matter in which I had any control I would be willing to trust Captain Weeks to all the merchandise in this port, so far as I am concerned. But I have no control over the matter. It is a matter that the Government pins us closely to. I told the captain that I would take pleasure in making any recommendation consistent, and would help him, and told him to make an application for his store-keeper, and then any one who made an entry for goods in his warehouse we would extend them all the facilities imaginable.

Question. If any importer desired to place goods of this character in his warehouse he has a right to do it?

Answer. He has, or in any warehouse. We have a great many warehouses here. I have here a list of all the warehouses and a list of the store-keepers in charge of the different bonded warehouses, December, 1873, giving the names of the store-keepers, the warehouse, the number, class, location of store, and remarks. There are three warehouses of class three in this city; and all the others are private warehouses. For instance, the warehouse No. 1 is what is called the United States warehouse, where all goods that are to be appraised must go, and all goods that are ordered of a very valuable nature, for instance, jewelry, because we have regular vaults down there for their safe keeping, and it is the intention, as soon as the roof of a custom-house is fixed to prevent the rain from going in there, that all general orders shall go in there, because it is the proper place. There is a warehouse belonging to Mr. Couturie, being a private warehouse of class No. 2, for the storage of goods coming to his house. He stores no other goods. There is another belonging to P. E. Binlatour; he stores none but his own private goods. It is the same with Maignan & Laborde, Mrs. John Gauche; the same with B. O. L. Rayne. These are warehouses that have been in existence for years. The three warehouses that receive other goods except their own are the importers' bonded warehouses. It is a corporation consisting of the principal importers here. Nearly all the wine and liquor is stored there. In fact, any goods coming to importers who are stockholders in that. There is also the Montgomery warehouse, which is No. 6, class 3, Joseph Michel; No. 11, class 3, R. Y. Chambury.

By Mr. WEST:

Question. Does Mr. Chambury have general order facilities?

Answer. Yes, sir; sometimes there is a certain class of goods that come here, for instance, goods that go to Mexico. Warehouse No. 6, class 3, is centrally located, because it is directly opposite the railroad. Those merchants prefer their goods going there, because it is close to the railroad, and they can be shipped at short notice and at less expense.

Question. Is there any drayage charge of general-order goods to warehouse No. 6?

Answer. No, sir; the understanding that they have is that goods going to general order go there, but they do not charge the drayage until they have time to make the entry, which can be made in three days.

Question. Then after they have been entered they remain in that warehouse, without any additional charge for drayage do they?

Answer. There is no charge, except they make special contracts. Any warehouse can make special contracts for drayage or for storage. The rate of storage in New Orleans is less than the rate of storage in New York, but the warehouses sometimes charge even less than that, in order to induce business. Every warehouse has that right.

Question. If a merchant's goods are taken to a general-order warehouse, No. 6, and subsequent to their being entered he changes them to another warehouse, is the drayage charged from the steamship to No. 6 warehouse?

Answer. No, sir; that is, within the prescribed time. I believe three days is the time. In relation to goods, all warehouses give the same class of receipt. Goods may be damaged on the vessel or they may be damaged on the route.

By Mr. DAVIS:

Question. Will you explain the difference between unclaimed goods and bonded goods?

Answer. Unclaimed goods are goods where no entry is made.

Question. What do you mean by no entry?

Answer. For instance the consignee may not be here or he may not be in a position to pay immediately the duty. The goods then are in the custody of the United States.

By Mr. SHERMAN:

Question. Goods when they arrive here must either be claimed and the duties paid, or they must be entered formally for the storage.

By Mr. DAVIS:

Question. Within what time must a warehouse entry be made?

Answer. Within twelve months. If it is not made within twelve months it is sold under general order.

Question. I mean within what time must the formal entry be made. He must pay the duty within twenty-four or forty-eight hours, or else the goods go into store?

Answer. The moment you make a warehouse entry you then take possession of your goods; that is, you have the privilege of designating the warehouse, but you need not pay the duties for a year.

Question. If a vessel arrives here with goods and they are unloaded on the wharf, what is the general movement of those goods; how do you treat them?

Answer. If the owner of the goods makes a warehouse-entry, he designates the warehouse where the goods go. If he makes an impost-entry he pays the duty immediately and takes possession of his goods. If he does not make an entry, of course, then it is a general order, or they are unclaimed goods.

Question. What proportion of goods that arrive go to No. 6 warehouse?

Answer. That I cannot well state. I will examine the books, however, if you desire.

Question. Approximate to it as near as you can.

Answer. It would be a very difficult matter.

Question. Well, as difficult as it is, try to get at it.

Answer. I could very easily tell you in a short time if I had permission to examine the books.

Question. Are you not on the wharf and in the warehouse every day?

Answer. No, sir ; my duties are supervisory ; I am at the custom-house from nine until three.

Question. You say your duties are supervisory ?

Answer. Yes, sir.

Question. Then you supervise where the goods go ?

Answer. No, sir.

Question. Who does ?

Answer. The merchant who makes the entry of the goods.

Question. The merchant cannot be on the wharf and receive each piece of goods ?

Answer. The inspectors are supervising.

Question. You direct the inspectors ?

Answer. No, sir.

Question. Who does ?

Answer. The surveyor.

Question. Can you not tell whether one-half, or one-quarter, or one-tenth of the goods go to No. 6 warehouse ?

Answer. I cannot well tell.

Question. Who controls No. 6 warehouse ?

Answer. Joseph Michel is the proprietor.

Question. Who is he ?

Answer. He is a resident here.

Question. A private citizen ?

Answer. Yes, sir.

Question. Is he any connection of yours ?

Answer. No, sir.

Question. Who owns the drays ?

Answer. Any one has the privilege of having a bonded dray.

Question. Who does own the drays which haul the goods to No. 6 warehouse as a rule ?

Answer. Mr. Gubernator has six of the drays, I think.

Question. Is he connected with the warehouse ?

Answer. No, sir ; in no way.

Question. Does the same gentleman who owns or controls the warehouse own any drays ?

Answer. No, sir ; not one. That I can very easily tell, because every drayman gives a bond of \$5,000 that the goods that are loaded on his dray will be delivered to the warehouse, or to the custom-house or to any steamboat.

Question. How do these drays make their living ? I understand you to say they do not charge anything for taking goods to the general-order warehouse. How are they paid ?

Answer. The warehouse has to pay them. That is a risk they run. If the goods remain in there, of course they have the benefit of the storage. If the goods are hauled out, that is their misfortune.

Question. Do any other drays haul them away from there except the drays which haul them up ?

Answer. Yes, sir ; any other dray can haul.

Question. The merchant can send any dray that he thinks proper ?

Answer. A merchant can bond his own dray. Every merchant has that privilege.

Question. Is it done ?

Answer. Yes, sir.

Question. Did you inform Captain Weeks when he called on you three or four times, whatever number of times it was, that there was

anything wrong with his papers at Washington, or did you tell him that he would have to wait until the collector returned?

Answer. He made the application, and when the application was returned, he asked me for the privilege of storing goods coming by his line. I told him that that was a matter I could not do; that the collector would be here soon. I have been expecting him nearly every day, but owing to the illness of his wife he has been unable to come.

Question. You did not inform the captain that there was anything wrong with his application or with the communication from the Treasury Department, or did you do so?

Answer. That there was anything wrong? No, there is nothing wrong about the application.

Question. I thought you said that you could not allow him to store the goods in there, owing to the order from Washington?

Answer. If you examine the warehouse regulation you will find that there are three classes of warehouses, and the one that he made application for was of class 3.

Question. I understand that, sir. What was the reason you could not let Mr. Weeks unload his own ships in his warehouse?

Answer. He could not do that, because, in the first place, he did not have a store-keeper.

Question. Did you inform him that that was the reason?

Answer. No; I told him that he had better make application for a store-keeper. A great many merchants may make entries to have their goods sent to his warehouse. We have no disposition in the world to obstruct the captain.

Question. Then I cannot understand why it is, if he has bought a warehouse for the purpose of facilitating his trade, that you have not either informed him that there is something wrong or allow him to have the goods.

Answer. I told him to make the application for the store-keeper.

Question. Make the application to whom?

Answer. To the collector.

Question. Could you not have appointed a store-keeper?

Answer. I would have had to submit his name to Washington for approval. All nominations are confirmed by the Department.

By Mr. WEST:

Question. What proportion of goods arriving from foreign ports are dutiable goods, are general-order goods?

Answer. That is a very difficult question to reply to, for this reason: Persons may make entries; sometimes the invoices may come and they cannot make entries.

Question. Is it 10 per cent., do you think, that go to general order?

Answer. I do not think it is. I desire to say to the committee that we are willing to facilitate commerce all we can, and that I am always at my house; the captain can get a permit at 12 or 1 o'clock at night for his vessel, if he desires it.

By Mr. DAVIS:

Question. The only thing I desire is to get the facts of why it is, if Captain Weeks has provided a warehouse, and it comes under the regulations, he has not been permitted to use it. [To Captain Weeks.] Will you state the facts regarding your application, and whether you were refused or not?

Answer. No, sir; my application was not refused, and the reason of my not calling on Mr. Herwig for a store-keeper was because he would not grant me what my application called for and what it was accepted for. My application went in as a general-order warehouse, and was accepted as such. That was not granted me, and that was the reason I did not call for the store-keeper, and I told Mr. Herwig the same—that until I could get what my application called for I should not use it at all.

By Mr. CONOVER :

Question. That application went in to make your warehouse a general-order warehouse ?

Answer. Yes, sir.

Question. That was not granted by the Treasury Department ?

Answer. It was granted.

By Judge KENNARD :

Question. (To Mr. Herwig.) I understand you to say that Mr. Chambury had a general-order bonded warehouse ?

Answer. Yes, sir.

Question. When did he get that permit ?

Answer. O, he has no general-order warehouse; his is simply a class 3 warehouse. There were three bonded warehouses that could be used as general order.

Question. I want to know how many general-order bonded warehouses are in actual use to-day in New Orleans ?

Answer. There are only three that can be used. There are only two.

Question. There are only two actually used ?

Answer. Yes, sir.

Question. To whom do they belong ?

Answer. One to Michel and the other to Mr. Chambury.

Question. When did Mr. Chambury get his permit; when was his warehouse made a general-order warehouse ?

Answer. His warehouse never was made a general-order warehouse, but the collector has at times designated goods to his warehouse.

Question. Then his warehouse does not stand on the same footing as the other. I understood you to say that there were two general-order bonded warehouses ?

Answer. There are two that are in the habit of getting general orders. There are three warehouses that can.

Question. I do not care about can; I want to know those which are actually licensed and are doing a general-order business to-day. Do I understand you that Mr. Chambury is one of those ?

Answer. Yes, sir.

Question. When did he get his permit ?

Answer. It was before our administration; that is, as to bonded warehouses of class three.

Question. Is that a general-order bonded warehouse ?

Answer. No, sir.

Question. When did he get his permit as a general-order bonded warehouse ?

Answer. There is no such thing as a general-order; that is, the collector can designate any one warehouse to receive the unclaimed goods.

Question. Which one has he designated ?

Answer. No. 6 has been designated as one.

Question. What other besides No. 6 ?

Answer. Mr. Chambury's.

Question. That stands on precisely the same footing, then, as No. 6?

Answer. Yes, sir.

Question. When was it placed on that footing?

Answer. It has been placed on that footing for some time.

Question. How long?

Answer. I do not remember.

Question. Can you approximate it?

Answer. I cannot well understand your question.

Question. I do not know whether the committee understands my question or not, or what I am aiming at. I have witnesses to prove that Mr. Chambury has very lately come into the possession of this privilege. I will, however, go from that. I have here the reply from the Treasury Department to the application made by Mr. Weeks. I understand that, in the bond which was forwarded from the custom-house, in obedience to those instructions, there were some restrictions with reference to the character of the warehouse which prevented you from making his a general-order warehouse. That is what you have testified to?

Answer. That there were restrictions?

Question. There was something in that bond that restricted this general privilege. According to this document he has an undoubted right to a general-order bonded warehouse.

Answer. To a bonded warehouse, No. 3.

Question. It says general-order bonded warehouse. What I want to get at is this —

Answer. (Interrupting.) I beg your pardon, "accepted by Department letter of the 13th instant, as a warehouse, class 3, for the storage of dutiable merchandise in bond."

Question. That is not this document. That is exactly what I am coming at. Here is the right that was granted Mr. Weeks from the Treasury Department direct. Now you undertake to modify that right by a document that you read there, that you say has been forwarded. I wish to know what sort of a bond was forwarded to the Department by Mr. Chambury before the permit was granted to him.

Answer. All bonds are the same.

Question. Then there was no defect in the bond furnished by Mr. Weeks?

Answer. No, sir.

Question. Then you did not propose to abridge the rights granted to him in this permit by the Secretary?

Answer. No, sir; I do not propose to abridge it.

Questions. But you have refused to license him as such.

Answer. No, sir.

Question. You have not?

Answer. No, sir.

Question. Are you ready to give him a permit now?

Answer. Yes, sir; he can make the application for a store-keeper of the warehouse to-day, or any time that he desires, but I cannot send the general-order or unclaimed goods there, except the Secretary of the Treasury should overrule that law.

Question. (Examining law.) This appears to be signed by C. A. Arthur, and it comes from the custom-house of New York. Is that the law which you are governed by?

Answer. Yes, sir; you will find that it is attested by the Secretary of the Treasury.

By Mr. WEST:

Question. Is Mr. Chambury an agent of a steamship?

Answer. No, sir.

Question. Does any steamship-line come consigned to him?

Answer. No, sir.

Question. Then, the distinction that you make between Mr. Chambury, in giving him the privilege of general-order goods, and Captain Weeks in not giving it to him is under this provision, that no such warehouse will be approved in the control or management of which any steamship company or agent has any interest?

Answer. Yes, sir.

Question. He having an interest of that kind, you declined to give him that privilege under your regulations?

Answer. Yes, sir; unless they make a warehouse-entry for his warehouse, which I should give with a great deal of pleasure.

Question. And Mr. Chambury not being an agent of the steamship, you are not restricted by this regulation?

Answer. No, sir.

Question. Did you inform Mr. Weeks that your regulations would not allow you to carry out the order of the Secretary of the Treasury?

Answer. I do not remember whether I did or not. His application was made and handed to one of the deputies, I believe. I told the deputy to make a favorable recommendation, and the letters were brought to me, and I signed them.

Question. You gave Mr. Weeks such information as would let him cure the fault, if there was one?

Answer. I do not remember of any conversation taking place between us.

Question. When did Mr. Chambury get his permit; was it a year ago, or was it yesterday?

Answer. Why, he has been receiving for I do not know how long. One of the oldest deputy collectors is present he was there before I was, and can perhaps tell you.

Mr. C. E. INGALLS. Perhaps I can explain about this. Every vessel which enters the port has to have a general-order permit. It is not that any one warehouse has the general orders, but it is after the vessel gets through discharging her cargo. The agent of the vessel makes an application to the collector for a permit to send the balance of goods that he has received no permit for to some warehouse, and each vessel, as it comes in, gets a general order for these goods, and the inspector sends those goods. As I say, it is not that any one warehouse has a general permit to receive general-order goods, but every vessel that comes in has to get what is called a general-order permit to send what the inspector has no permit for at the time she has discharged, and that permit designates to what warehouse these goods shall be sent.

Judge KENNARD. I would like to call the attention of the committee to this fact. Here is an application made to the Treasury Department for a general-order bonded warehouse, which has been accepted and approved. Now, the facts appear to be, no matter from what cause, that the rights granted by the Secretary of the Treasury have been abridged by some regulation in the custom-house here. I merely call the attention of the committee to that, and I think if such impediments exist they involve the disregard of the orders of the Secretary of the Treasury. He has given, undoubtedly, an unconditional order in this man's favor for a general-order bonded warehouse, and some regulation inter-

venes to prevent him from reaping the fruits of that grant. What that regulation is I do not know.

Question. (To Mr. Herwig.) Did Mr. Chambury have this permit three days ago, which he now holds?

Answer. There is no such thing as permit.

Question. Just answer that question categorically, and then you can make any number of explanations you please.

Answer. He has often received general orders——

Question. I ask the specific question, whether he had the permit he is now in possession of from the custom-house three days ago?

Answer. No bonded warehouse ever had a permit.

Question. That is not an answer to my question.

Answer. Do you mean whether he had the order from the Treasury Department designating his warehouse as a bonded warehouse?

Question. I mean, has he received a permit from the custom-house in the last three days. Has he received any document of any sort, shape, or kind?

Answer. No, sir; no document, to my knowledge, nor has any other warehouse.

Question. Did he not once have this general order, and then have it taken away from him?

Answer. He had a part of it. Often a merchant would come up and ask that his goods might be sent to Mr. Chambury, or to No. 6, or to No. 4, or to different warehouses.

Examination of E. D. FROST, general manager Great Jackson route:

By the CHAIRMAN:

Question. What roads are you manager of, and what are their termini?

Answer. I am the manager of the New Orleans, Jackson & Great Northern Railroad, which terminates at Canton, Miss., and is two hundred and six miles long; also of the Mississippi Central Railroad, running from Canton and terminating at Cairo, Ill., which is three hundred and forty-two miles long; also of the Mississippi & Tennessee Road, from Grenada, Miss., to Memphis, Tenn., one hundred miles long.

Question. What is the distance from here to Cairo by your own route?

Answer. Five hundred and forty-nine miles.

Question. With what other means of transportation between Cairo and here are you brought into competition?

Answer. With the river, and with the line of railroad from Columbus, Ky., to Mobile, and to this point.

Question. There are three competing lines, yours being the central one?

Answer. Yes, sir.

Question. Which do you find to be your most serious competitor?

Answer. The river.

Question. Please state your charges from Cairo here by rail on fourth-class freight, on grain, corn, and wheat.

Answer. Grain is about seventy-five cents a hundred from Chicago here.

Question. And Chicago is how far beyond Cairo?

Answer. It is three hundred and sixty miles north of Cairo?

Question. What is it from Cairo here?

Answer. It is about 40 cents.

Question. Do you run in connection with the Illinois Central?

Answer. Yes, sir.

Question. You form now a through line from Chicago here?

Answer. Yes, sir; both to Saint Louis and Chicago.

Question. What is the difference between your rates on the same class of freight that we have spoken of and the river rates from Cairo here?

Answer. It is usually in the proportion of sixty-six and two-thirds to the hundred. We charge, say a dollar, where the boats charge 66 $\frac{2}{3}$ cents. It is about in that proportion. The rates are very fluctuating, according to competition. There is also a very strong competition on the river between the boats themselves.

Question. They charge about 66 per cent. of your charge on the same product?

Answer. Yes, sir.

Question. Do you prorate with any river line?

Answer. No, sir.

Question. I mean any part of the Ohio.

Answer. No, sir.

Question. Nor with the Upper Mississippi?

Answer. We prorate with boats on the Upper Mississippi.

Question. From what point?

Answer. From Saint Louis and any point on the line.

Question. Do you remember the terms of the prorating?

Answer. I do not know.

By Mr. SHERMAN:

Question. What proportion of the year is navigation on the river impeded, either by low water or by ice? Is it ever impeded by ice from Cairo down?

Answer. Yes, sir; there have been for two successive years heavy gorges south of Cairo, and it is usually impeded a great deal by low water. I think it would average about three months in the year.

Question. Do you change your rates when these impediments occur?

Answer. They go up and down.

Question. They advance the rates according to competition?

Answer. Yes, sir; it fluctuates like all other things.

Question. Do you form connection by through line to Chicago and New York?

Answer. Yes, sir.

Question. Do you prorate per mile?

Answer. Yes, sir; on freights.

Question. What is the through freight from here to New York by way of your line?

Answer. That fluctuates. I can give you the rate from Cincinnati or from Louisville.

Question. Give it, if you please, on fourth-class goods.

Answer. From Louisville is 40 cents on fourth-class goods.

Question. From here to Louisville 40 cents?

Answer. Yes, sir.

Question. How much to Cincinnati?

Answer. Fifty.

Question. Is not that lower than the same distance on routes where there is no river competition to compete with?

Answer. I think not.

Question. Are those rates not lower per ton per mile than the rates from Chicago to New York?

Answer. Yes, sir, at times. Sometimes Chicago rates are lower than that. This Cincinnati rate rises and falls according to the condition of the river.

Question. And for that traffic you have competition with the Mobile and Ohio Road?

Answer. For the Louisville and Cincinnati trade we have competition with the river and with the Mobile and Ohio Road, and then with the line of road through Montgomery and Decatur, Alabama. We have three competitors by that route.

Question. Can you give the yearly tonnage of your road?

Answer. The northern hundred miles of our road was opened only a week ago, but the tonnage of this Jackson road I can give you for two years. In 1871 and 1872 the total tonnage at this station was 187,941 tons; for 1873 it was 210,595.

Question. Can you give us the whole tonnage moved?

Answer. That is the whole tonnage moved.

Question. Is the tonnage greater going northward or coming southward?

Answer. Coming southward. The cotton makes it heavier.

Question. Is the cotton the chief product moved?

Answer. The chief product moved south. The tonnage of cotton is larger.

Question. Have you any tonnage of grain, corn, cereals?

Answer. No, sir; we haul very little corn or grain. That comes by the river, from the fact that we have never had any convenience here for handling it.

Question. Have you any warehouse or elevator facilities on your road?

Answer. No, sir; we have none yet. We are just making provisions for them at the river.

Question. Have you ever competed in the hauling of coal or iron-ore?

Answer. No, sir; coal is all brought here in barges or coal-boats.

Question. You have not reached the coal-mines of Alabama in your line?

Answer. No, sir; we have just reached the coal-mines of Illinois and those of Kentucky. We reached the coal-mines of Kentucky by the Elizabethtown and Paducah road.

By the CHAIRMAN:

Question. Do you bring any coal from there here?

Answer. The first shipment is now on its way.

Question. You have no doubt studied this question of transportation. What is your explanation of the fact that so small an amount of north-western cereals find their way to this point?

Answer. I think it owing to the obstruction and the difficulty of getting them away from here, the facilities being so poor.

Question. On account of the want of tonnage?

Answer. Yes, sir.

By Mr. SHERMAN:

Question. Give us a little more fully your reason for the causes. What other causes operate to prevent wheat or corn from being transported by this route?

Answer. The obstructions at the mouth of the river are of such a nature that the tonnage of vessels which come in here is limited; the ex-

pense of getting in is great; the danger is great. That makes the rates of freights higher here, and we cannot for those reasons compete with other points.

Question. That is from New Orleans outward?

Answer. Yes, sir.

Question. The obstruction is here at this place and below?

Answer. The obstruction is below us.

Question. Is there any complaint made, in transporting by rail, about local charges in New Orleans?

Answer. Yes, sir; there is considerable complaint among people about the charges in New Orleans.

Question. Does your railroad come along the docks, so that you can load directly from your cars on to the river?

Answer. Yes, sir; we have a track of that kind.

Question. Do you pay any wharfage charges for loading and unloading?

Answer. No, sir.

Question. Your track is right on the wharf?

Answer. Yes, sir.

Question. Are all the railroads that enter New Orleans provided with the same facilities for shipment on the wharves?

Answer. Yes, sir.

Question. A vessel receiving your produce would pay the same wharfage as any other vessel?

Answer. Yes, sir.

Question. Is there any proposed extension of the system of railroads that concentrate here farther south to the proposed canal?

Answer. I have heard of none.

Question. Do you know whether or not it is possible to build a railroad down there?

Answer. O, yes, it is possible to build a railroad and maintain it there.

Question. Is there any difficulty whatever in the way of building a railroad from here to the proposed canal, so as to make your great depot there?

Answer. No, sir; none in the world. The difficulties of building a railroad from here to the canal are very small, compared with building our road out here forty miles. We encountered greater obstacles than will be encountered down there.

Question. Do you know the length of the line of railroad from New Orleans to the proposed canal, cutting off all bends so far as practicable?

Answer. No, sir; I do not.

Question. Has it ever been surveyed?

Answer. I think not. I do not think any line has been surveyed; if it has, I have no knowledge of it.

Question. How does the expense of building a railroad on this low, flat, marshy ground compare with the expense of building a railroad on an ordinary line, say through the Upper Mississippi and Tennessee country?

Answer. It is much less.

Question. The expense of piling is much less than the expense of bridging, &c., is it?

Answer. In running a line down this river to the point of the proposed canal, I should run it on the high land.

Question. Near the river?

Answer. Yes, sir; I should run it near the river.

Question. Following the river ?

Answer. Yes, sir; except in very sharp bends.

Question. For what reason ?

Answer. The difficulty of maintaining the road on timber in such places.

Question. What are the difficulties; worms ?

Answer. No, sir; decay.

Question. The timbers rot ?

Answer. Yes, sir.

By the CHAIRMAN :

Question. Have you ever made an estimate of the actual cost per ton per mile of transporting in this country, exclusive of any dividends ?

Answer. Yes, sir; I have made calculations. It varies a good deal; on through freight it is about a cent a ton per mile.

Question. You think that is about as low as the cost can be reduced ?

Answer. That is as low as it can be reduced.

Question. Starting at Cairo, can you compete with the river from that point here, in point of charges ?

Answer. We can, if they will ask paying rates. If they will charge living rates we can live.

Question. You mean to say you can carry as cheap from Cairo here as they can ?

Answer. No, sir; but we save the insurance. We get that advantage.

Question. I believe that insurance is quite high on the river ?

Answer. Yes, sir.

Question. Do you remember what it is from Cairo here ?

Answer. No, sir; I do not.

Mr. TUCKER. It is three-quarters per cent. on fourth-class goods.

Mr. FROST. We are sometimes enabled to carry through freights bound north very low, from the fact that our cars can load with the cotton coming south. For five or six months in the year we have the empty cars going back after more cotton.

Question. About what proportion of your tonnage is north-bound and what proportion south-bound ?

Answer. Our south-bound freight is about 65 per cent.

Question. Of the whole ?

Answer. Yes, sir.

Mr. TUCKER. Mr. Chairman, that insurance is $7\frac{1}{2}$ cents per hundred; for instance, 35 cents to $42\frac{1}{2}$ cents, as compared by rail and river. Seven and a half cents a hundred pounds is the difference between rail and river.

Mr. FROST. I would say here that the time frequently gives us an advantage.

By the CHAIRMAN :

Question. And the distance by river, owing to bends, is nearly double the distance of your road ?

Answer. Yes, sir. I am by profession a civil engineer, and I have found from experience in surveying that most all these southern rivers are twice as long as the air-line.

By Mr. SHERMAN :

Question. What is the time between Cairo and New Orleans for ordinary freight-trains ?

Answer. About two and a half days.

Question. What is the time from Cairo to New Orleans by an ordinary steamboat?

Answer. I think it is about five days or six days.

Examination of General G. T. BEAUREGARD.

By the CHAIRMAN:

Question. We have called you for the purpose of asking your opinion as to the effect of the proposed Saint Philip Canal as a means of military defense. As you have doubtless studied this section of the country considerably, will you be good enough to give us your opinions upon that subject, as compared with the present condition of the mouth of that river?

Answer. I will state for the information of the committee that it would be of much greater advantage in that respect than in the present condition. You are aware, I suppose, that our forts are about thirty miles from the mouth of the river, and that an enemy landing could come up to the very forts without any hinderance, and would cut off any communication from the exterior at the very time that we would have most need of the river as a refuge; whereas by the construction of that canal it could be defended by a fort at Isle au Breton, which offers a very good condition for the construction of a fort, and by bringing the entrance of the canal into the river within reach of the guns of Fort Saint Philip and Fort Jackson, both extremities of the canal would be protected. In the event of a war, an enemy's fleet or other vessels drawing more than 18 feet of water could not enter the river at the mouth, whereas our vessels, by going into the Breton Harbor, could have a safe entrance into the canal and then into the river by means of the canal. I think that the advantages are so apparent that really it requires no discussion to show how important it would be for the construction of the canal in a military point of view.

Then, again, at the mouth of the river, by constant operation we can get about 20 feet; but in case of a war, with the enemy's vessels lying off near the bars, you could not expect those bars to be operated upon, and the draught would again be reduced to about 17 feet; whereas by the construction of the canal you would have at least 25 feet. I see no reason why we should not obtain a greater depth indeed than 25 feet; but we could have 25 feet certainly, and I believe our largest vessels of war could then enter into the Mississippi River; and certainly there is no port in the world equal to the Mississippi River for vessels of war, and even for a commercial fleet. There would then be no necessity for having a harbor of refuge, or even a harbor for naval construction at Pensacola. Whatever expenses might be made at Pensacola could be very well diverted to the canal, and that much would be saved to the Government. I think that for a country which occupies so high a position as the United States, and which is bound to occupy a still greater one in the course of human events, that that advantage ought certainly not to be lost sight of; that is, to get an entrance of at least 25 feet into such a stream as the Mississippi River. I see no engineering difficulties in the way that cannot be overcome. Of course the work would have to be done with a great deal of care and after a great deal of study; but in my opinion, as an engineer, I think it practicable.

Question. What is your opinion as to its practicability as compared with any of the other modes of keeping the mouth of the river open.

Answer. With the other modes you would have to expend annually

a very large sum, because of course any removal of the bar which you make there, as has been shown, is bound to be carried on annually on account of the deposits that take place, whereas by the construction of a canal, after you shall have expended about six or seven millions, then it would take very little indeed to keep the canal in repair if the locks are properly made, and by not allowing the river water to flow directly into the canal there would be very little deposit in it, so that the annual cost for removing the deposits which might take place would be very small in comparison with the bars of the river.

By Mr. SHERMAN :

Question. How would you overcome the difficulties of getting a good foundation for the very heavy lock that would have to be made ?

Answer. That is an engineering difficulty that would be very easily overcome.

Question. What methods were adapted in getting the foundation for the custom-house in this city, for instance ?

Answer. They used heavy timbers lengthwise and crosswise, and then concrete on top of that to bear a certain weight on the foundation. We can easily calculate the compressibility of our soil. In fact, I made a series of experiments at that time which determined the amount exactly of compress of our soil for certain weights, and by that we can guide ourselves perfectly as to the amount of settlement. All that you have to do is to give sufficient base to your foundation. If 20 feet will not do, you can give 25, 30, or 40 feet. That is a matter of calculation which I think any engineer who understands his profession can overcome. I see no real obstacle that cannot be overcome. It is work that would have to be thoroughly studied and executed with great care, but at the same time I am very certain that the corps of engineers would execute it.

Question. How does the foundation there compare with the foundation here, say, at the custom-house ?

Answer. It is pretty nearly the same thing. We encounter pretty nearly the same soil. Now and then we come across a layer of clay, and sometimes sand mixed with clay and sometimes a little quicksand. In that respect you would have to sound to determine exactly the nature of the soil, and according to that soil then you construct your foundations. If a system of drainage will not answer entirely, you can use piles. If you find a layer of clay for instance 40 or 50 feet deep, and do not wish to go that low for your foundation, you drive the piles into the layer of clay that will give you resistance enough, and we can tell exactly what the piles ought to bear. You can tell exactly the degree of settlement that you are to encounter.

Question. Do you know of any work in the world of a similar character where such great weight has been put on a foundation like that ?

Answer. We can take as a criterion the canal across the Isthmus of Suez. The ground there was more difficult. It was pure sand, which is more difficult to construct in than in alluvial soil.

Question. Is that about the same character of work ?

Answer. In general features it is.

Question. There is a lock and break-water in that Suez Canal ?

Answer. Yes, sir ; I do not think that the difficulties cannot be surmounted, but, as I have said before, they will have to be considered and studied with great care.

Question. Do you think there would be any difficulty from the water passing into the locks ?

. Answer. No, sir; the difference of level between high and low water is only 4 or 5 feet.

Question. Could the water that goes into the lock be carried in some lateral way?

Answer. Yes, sir; by having lateral basins you can allow the water to settle there, and draw it into the canal when perfectly settled, so that your deposits would be only in your lateral basins, and those can be easily moved by machinery—by the present system. The canal would have to be dug of course in water, because if you were to draw the water out the probabilities are that the banks would cave in; but you have to construct the bank with a natural slope of one upon one, and the deposits, if put on the sides of the banks of the canal, should be extended not to offer too much pressure on the sides.

Question. Do you think a slope of one to one would be sufficient on that kind of soil?

Answer. I think so. You might give it a little more for greater security, but one upon one I am pretty certain would answer the purpose, if the canal is made wide enough so that the slope shall not be injured by the motion of the water created by the propellers of the boats. I think that it is an enterprise of such magnitude that it ought not to be made on the minimum scale. The importance of having navigation of the Mississippi River proper at all times, in peace and war, is so very important that a few million dollars should not be an obstacle in the way.

Question. Did you make that estimate of \$6,000,000 originally?

Answer. No, sir; I had nothing to do with that. That was done by Major Howell, of the engineers. He was the local engineer.

Question. There was an estimate made many years ago and I thought he only confirmed the previous estimate.

Answer. The previous estimate was made by a gentleman who was not a professional engineer, and if my recollection serves me right he made it at \$2,000,000. As I say, he was not a professional engineer. His name was Montague.

By Mr. WEST.

Question. Have you any recollection of the estimate of Major Chase?

Answer. No, sir; that was before my day. I do not know that he made an estimate because he had not the surveys, and no estimate can be made without the surveys. But this estimate of Major Howell is, I take it, more nearly correct than any other I know of.

Question. How would the weight of the proposed lock, as far as you are conversant with these plans, compare with the weight of the walls of the custom-house, either per square foot, or in gross mass?

Answer. I have not gone into the calculation, so that I cannot give you a definite answer.

Question. Which do you think would be the greater?

Answer. I think that the weight of the walls of the custom-house would be the greater. The weight of the custom-house is greater in proportion.

Question. Do you think that proportion would be material?

Answer. I do not recollect what my calculations were with regard to the custom-house. The building there you are aware has settled about 22 inches.

Question. But, as I understand you, the pressure would be as against the custom-house and in favor of the canal?

Answer. Without going into a calculation, I should say it would.

Question. You are familiar with the construction of the forts and the character of the soil immediately adjacent?

Answer. Yes, sir.

Question. How do the walls of those forts compare in weight with this proposed lock?

Answer. An engineer does not like to commit himself without having the drawings, &c., before him. I did not lay the foundations of those forts, but what I can say is this, that it is easy to ascertain the resistance of the soil there, and what sort of a foundation is necessary to prevent settlement. That is the A B C of engineering, so that you must not think that is the great obstacle. By a new series of experiments we can tell as nearly as you gentlemen can tell by figuring up any account, and as accurately, as to the settlements; then it is an easy problem to determine what width of foundation or what number of piles shall be driven to obtain a proper resistance. Then again, I suppose you have seen the plan of Major Howell, which is a most excellent one. But I would not adopt that plan; I would vary it. I think the modification which General Barnard suggested at the time I was present at their meeting would be a very advisable one. He makes masonry only for the gates, and the rest of the lock would be a basin. He has two gates, one in front and one behind; and the intermediate space is nothing more than a wide basin, so that you have only the masonry necessary to resist the pressure against the gates; so that I consider it not a difficult problem. The rest of the basin, to pass your vessels into, you can make as long as you please, five, six, or seven hundred feet, if you choose, and put the other lock at the extremity of that, and in between you have a gentle slope requiring no masonry and no foundation; that is the view I would take of it.

Question. That would very much lessen the expense?

Answer. Very much indeed. You may have a little deposit at the front of your gates, but that is easily removed by a dredger, because you cannot put the gates right on the river, but a little back and the opening there can always be kept by a dredger. There would be no difficulty about that.

By Mr. DAVIS:

Question. Is it fair to presume if the fort which is near this spot remain without settling that the lock would?

Answer. O, I think so. Our soil is pretty nearly the same at the surface as it is 30 feet down. There is a little variation in the layers of sand and mud and what not, and occasionally we come across a bed of clay 5 or 6 feet in depth; but you can take it as a rule that the soil is pretty nearly homogeneous from the surface down a great many feet. If you make your experiments at a certain depth as to the resistance of the soil, then you can tell exactly what sort of a foundation you require to resist in any given pressure. If you cannot obtain the resistance by extension of your foundation—by giving width to the foundation, then you drive in piles besides, which gives you the resistance of the piles. A foundation has two resistances, that due to the pile and that due to the surface of your crib-work or foundation. As an example: in the custom-house, if they had driven piles below the foundation and laid the foundation on the piles and used the same crib-work that they used, I am confident there would have been no settlement. As it is it has settled about 20 inches.

Question. Timbers for foundations kept from the air never rot, do they?

Answer. Never.

Question. So that a timber foundation excluded from the air is as good as a stone foundation?

Answer. Perfectly. In making the repairs at Fort Saint Philip and in removing the foundation in 1852 or 1853, I had to remove some of the foundations laid by the Spanish engineers. They were green timbers, just cut from the banks of the river, and they were perfectly sound.

Question. I understood you to say that you had given this canal some thought, and as an engineer you believed it to be practicable.

Answer. Yes, sir; I would not hesitate to say that I consider it practicable, and I think that it is of such great importance that the Government ought not to hesitate an instant in constructing it for the purpose of having the use of the Mississippi River as a harbor of refuge in the event of a war, leaving aside its commercial advantages, which are enormous. The river defenses, of course, do not come up to my idea as an engineer, but, at the same time, they could be improved so as to be made impassable.

By Mr. SHERMAN:

Question. Have you studied the question as to the effect of large ships cheapening transportation?

Answer. I have not studied it, but I agree with those who have written on the subject, that the proportion is enormously in favor of large ships. I doubt not that before many years there will be commercial vessels drawing 28 and 30 feet of water. The expenses are very much reduced, as you are aware, on board of a large ship. They require fewer hands in proportion, and all the other current expenses are less. I think their speed, in proportion, is greater also. I think the Mississippi River ought to have at least 25 feet of water on its bar.

Question. What is the depth of water from Vicksburgh down?

Answer. It is pretty nearly what we have here. It varies here from about 85 to 108 or 110 feet.

Question. Do you think it would be possible for vessels of 25 feet draught to run up as high as Cairo ordinarily?

Answer. No, sir.

Question. What would be the point on the river to which such vessels could go?

Answer. I think the shallowest point commences at Memphis.

Question. That is about the head of deep-river navigation?

Answer. Yes, sir. Such a harbor as this, of course, would be then perfectly protected from any incursions if the forts were made strong enough to resist say a fortnight, or a month; for in that time we could transport here a hundred or two hundred thousand men, if necessary, so that no land force could possibly take the forts, and by a judicious system of defense, of torpedoes and a boom or booms across the river and guns to defend those torpedoes and booms, I consider that the river could be made impassable. I have no hesitation in saying the river at the forts could be made impassable.

By Mr. DAVIS:

Question. How far is it from here to Memphis?

Answer. I think it is about eight hundred miles.

Question. You are well acquainted with the mouth of the Mississippi?

Answer. Yes, sir. I was in charge of the improvements there for several years previous to the war.

Question. Were you dredging there?

Answer. Not exactly dredging, but I was superintendent of the oper-

ations of some contractors here, who deepened the passes to about 18 feet for the sum of \$75,000. That was not by dredging, but by harrowing and scraping, as they call it.

Question. During the war, I take it that there was nothing done in any way to aid the depth of the channel?

Answer. No, sir.

Question. At the end of the war do you know how its condition compared with its condition at the commencement of the war?

Answer. The regimen of the river is pretty nearly uniform, and has been the same as far back as we had any knowledge, but some of the passes deepen and others become shallow. The depth at the Southwest Pass has generally been from 15 to 16 feet of water. At Pass à l'Outre it has varied from 12 to 15 feet; that is about the range of the passes there. I think, artificially, you can get about 20 feet of water, without very extravagant expense, but if you stop your operations for any length of time the bar will go back to its original depth.

Question. What is that?

Answer. What I told you before. At the Southwest Pass from about 15 to 16 feet.

Question. Was that actually the fact during the war?

Answer. Yes, sir; at least it must have been so. It has been so from time immemorial. From the discovery of the mouth of the river and Louisiana the depth at the Southwest Pass was about 14 feet. The amount of water being the same passing through the passes, gives the same regimen over the bars, taking all in all. Sometimes one pass gets deeper than the other on account of the direction of the current, which strikes according to the impact of the current. When I was in charge of the operations at the mouth of the river, Pass à l'Outre, on account of a break that had taken place above, at what they now call the Jump, which had turned the thread of the current, was deeper than the Southwest Pass, and varied from 16 to 17 feet, and the Southwest Pass averaged about 15 feet. It depends entirely on the mass of water which passes through. I suppose you are aware that when the river is low there is more water over the bars than when it is high, and that occurs for this reason, that when the river is high it carries a great deal of sediment, which is deposited at the bars. When the river is low there is no sediment carried, and when there are any of these southeasterly storms blowing for several days they back up the water into the river, and as the water rushes out it scours the bottom and gives you deep water in the passes, there being no sediment to flow up again.

Examination of CHARLES BRIGGS, president of the Louisiana Mutual Insurance Company.

By the CHAIRMAN:

Question. How long have you been engaged in the insurance business?

Answer. As an underwriter, in one shape and another, about fifty years.

Question. Can you give us the foreign rates of insurance between this port and Liverpool, and New York and Liverpool?

Answer. I can. The rate in New Orleans is as near as it can be very nearly double the New York rate. It is, perhaps, not quite double.

Question. Does it usually maintain that proportion?

Answer. Generally. It is a greater distance, and that causes it.

Question. Is it on account of distance wholly, or is there any other reason?

Answer. I should think it would be entirely owing to distance.

Question. Do you, or do you not, regard the passage from here to Liverpool as involving greater risks than the passage from New York to Liverpool?

Answer. Of course.

Question. I mean aside from distance.

Answer. Yes, sir. I should suppose it would be during six months of the year—during the six summer months. In the winter months I should prefer the passage from here to that from New York.

Question. Does the danger of the passage materially enter into the increased charge, or is it mainly the distance?

Answer. I presume there must be some little increase in the risks, in consequence of the passage by the Bahama Banks and through the Florida Channel. That view would apply almost altogether to sailing-vessels. Where the ship has motive power within herself, as the steamers have, I look upon the Bahama Banks as a bug-bear, because, for ships coming from Europe and going to Europe, the channel is thoroughly well lighted. There is no difficulty in going over and coming from Europe. They make for the northern edge of the Bahama Banks. The banks, as I say, are all thoroughly well lighted there. They run down either along the Florida coast or the head of the banks, the whole distance being thoroughly lighted, and with no risk whatever by steam. Where vessels depend on sail, and meet with baffling winds, calms, and currents, they are frequently set out of the channel, and the risk is infinitely greater.

Question. What is the percentage of insurance from here to Liverpool? How does it range on sail and steam, giving them separately?

Answer. The difference now is from a quarter to a half per cent.

Question. Between sail and steam?

Answer. Yes, sir; that is, a difference of from 25 to 30 per cent. upon the amount of the premium in favor of steam.

Question. What are the charges?

Answer. The rate in the winter season is by sail 2 per cent. There is a half per cent. difference. The rate by sail at this season of the year, from hence to Liverpool, is 2 per cent., and one and a quarter per cent. by steam.

Question. What is the present rate?

Answer. That is the present rate.

Question. Is it higher or lower in the summer months?

Answer. Lower.

Question. How does it range then?

Answer. In the summer months it is generally about a half per cent. lower by sail, and we have hitherto made a quarter less by steam.

Question. You insure on the river, do you not?

Answer. Yes, sir.

Question. What are your rates on the river between Cairo and here?

Answer. We charge three quarters per cent. on the river.

Question. What mainly constitutes the risk on the river between here and Cairo?

Answer. There is danger of collision, danger of burning, especially in the case of cotton-boats, and danger of stranding. Boats in thick weather and in fogs sometimes run against the bank or against a bar, making either a total or an average loss.

Question. In your judgment, do snags and bars materially increase the risk?

Answer. O, yes, they increase it; but nothing compared with what it used to be, because a great many of the snags have been taken out. The snags used to be a material increase of risk.

Question. What is the rate of insurance from Saint Louis to this place?

Answer. One per cent.

Question. Do the snags and bars materially increase the risk there?

Answer. Yes, sir; more than they do below. The river between Cairo and Saint Louis frequently gets down to $4\frac{1}{2}$ or 5 feet. From Cairo to Memphis there is seldom less than 6 feet channel, and from Memphis down we have deep water always.

Question. Do you insure the lighter boats of the Upper Mississippi above Saint Louis?

Answer. No, sir; that is all done above. I do not remember of ever having had an application of that kind.

Question. Do you know whether the northern insurance companies will insure those boats to come over from Saint Louis down here?

Answer. I believe not.

By Mr. CONOVER:

Question. Your rates here decrease during a certain portion of the year, you say?

Answer. Yes, sir.

Question. Are not the rates from New York decreased at that season of the year that you decrease them here?

Answer. I presume they are. The objection to the northern passage, the route from New York, is their rock-bound coast, and the ice. Steamers even sometimes run down to Cape Breton for coal. They get into heavy, thick fogs and ice, have a rocky coast to encounter, neither of which we have to encounter here.

Question. The rates from here are always greater than they are from New York?

Answer. Well, the distance from New York to Liverpool is about twenty-seven hundred miles, and from here it is nearly five thousand miles, or double that distance. We have, unfortunately, to run about 60° south before we can make any easting. We have to run down to the line of the tropics before we can begin to run eastward, and then have to come back again. I hope some day to see a canal through the peninsula of Florida, to bring the great West within fifteen days of Europe. When that is done it will be a grand improvement.

Question. That is the point I am trying to get at, whether these rates are higher in consequence of the passage of the Florida Reefs being so hazardous?

Answer. I, as an underwriter, the year round would rather take the risk from here than I would from the North, coming from Europe especially.

By Mr. WEST:

Question. On sailing-vessels as well as steamers?

Answer. Yes, sir.

Question. As an underwriter, I understood you to say you would prefer the risk from Liverpool to New Orleans.

Answer. Yes, sir; as a general thing.

Question. Rather than from Liverpool to New York?

Answer. Yes, sir; on account of the extremity of the season there compared with ours here.

By Mr. CONOVER:

Question. At all seasons of the year you would prefer that?

Answer. Yes, sir. Every day a ship is at sea there is a risk, and a sailing-vessel going from here to Europe, or coming from Europe here, is double, or nearly double, the time that she is in going to New York, which will account for the difference on the score of difference of time alone. I speak of that to show that the greater portion of the difference of rate is on account of the greater distance the vessels have to run.

Question. Of course there is some difference on account of the dangers of passing the Florida coast?

Answer. In sailing-vessels I think there is, but not with steamers. We shall do all our work with steamers, I hope, before long, and get rid of sailing-vessels.

By Mr. DAVIS:

Question. To what extent do you insure on the value of the boats and cargo coming down the river?

Answer. We never insure the boat in my company, because we have a large number of open policies out to our people, which cover all their shipments, whatever the amount may be, and we never know until the vessel arrives precisely what we have on board; but the system of insuring for the cargo coming this way is to grant the factors and commission merchants open policies to cover all shipments to their address. We generally stipulate to get all the information by telegraph that we can, when a very large consignment is likely to come down, so as to enable us to re-insure the excess that we are indisposed to carry. There is no limit to our insurance on inward cargoes coming this way on the river. Some of those factors might receive one of those open policies of a thousand bales of cotton, worth \$80,000, all insured in one office. If the office can ascertain by any mode that they are going to receive \$80,000 worth on board of one of these boats, they would re-insure with other companies in such proportion as would somewhat relieve them.

Question. If a cargo is worth \$10,000 at Saint Louis, to what extent will you insure it coming here?

Answer. The whole value of it. In old times they used to send it down in flat-boats, all under the charge of one man, and then there might be an object in insuring for a portion only of the real value; but when a steamer brings down a cargo consigned to fifty people, and belonging to fifty shippers, we think there is no danger of any collusion to destroy the cargo, and, therefore, we insure the full invoice amount.

Question. Does that hold good across the Atlantic?

Answer. Yes, sir. On board of a ship there are generally eight, ten, twelve, or fifteen shippers, and it would require a combination not likely to take place among all those men to induce the captain of a ship to destroy that cargo for the sake of the insurance money.

The committee here adjourned.

WASHINGTON, D. C., *January 19, 1874.*

Examination of Capt. C. W. HOWELL, U. S. A.:

The CHAIRMAN. Please state your connection with the works at the mouth of the Mississippi River, and briefly, the operations of the tow-boat company which tend to obstruct your work.

Captain HOWELL. I am the officer of engineers in charge of the improvement at the mouth of the Mississippi. The improvement is effected by dredging a narrow channel across the bar. The channel has never been more than 250 feet wide; often not more than 50 feet. The depth has ranged from 15 to 20½ feet. The width at Southwest Pass is now three-quarters of a mile, and the normal depth is about 14 feet. At Pass à l'Ostre the width is about half a mile, and the normal depth about 11½ feet. The channel improved by dredging is but a narrow passage through the bar, and is defined by buoys on the sides. It therefore requires care in running vessels through it to prevent them from getting out of the channel and running aground on the sides.

The CHAIRMAN. Please state in what manner your work has been obstructed by the tow-boat association, giving instances of such obstructions, and how it affects your work.

Captain HOWELL. The tow-boat association have at several times obstructed the channel made by the dredges, and have at some times completely blockaded it. They do this by running vessels aground on the sides of the channel. In that position such vessels induce rapid deposit in the channel, and are in the way of the dredge-boats. It is not to the interest of the association to have a channel of more than about 16 feet in depth. This is shown by the fact that with a channel of that depth, or less, they have a great deal more business by the way of tugging, receiving a larger income from that business than they would if the channel were in good condition.

The last blockade at Southwest Pass was started in March 10, 1873, and in this way: The channel was only 17 feet deep at extreme low tide, and heavy fogs were prevailing at that time. On the morning of the 10th the association, at low tide, took a heavy-draught ship, drawing 19 feet, down to the bar during a dense fog, when the buoys marking the channel could not well be seen. On arriving at the inner end of the cut through the bar, at the wreck-buoy, it is reported to me that the captains of the tow-boats—one on each side of the vessel—differed as to the proper direction to take in going out. One backed his boat and the other went ahead, thus placing the ship across the channel and grounding her. It was then left by the boats in that position for three days, thus completely blocking the channel, and before the vessel could be got out of the way heavy steamers from New Orleans came down and attempted a crossing, grounded, and further blockaded the bar. After this, as fast as one vessel would be taken out of the way the tow-boat association brought another down, and so obstructed the bar that the dredging-boats could not dredge it. This continued for twenty days. In the meantime heavy-draught vessels were put on and towed across, after several days being consumed, and lighter draught vessels went in and out between the grounded vessels—vessels drawing 15 feet. On the 30th of March all the vessels had been removed from the bar, except one large steamer. The dredging-boat, pulling on her on the morning of the 30th, got her straight in the channel and started her. She would have gotten out without difficulty if the headway had been kept up. Just at that time one of the tow-boats attempted to tow in a bark from outside, towed the bark directly across the entrance of the

channel, and ran her aground, cut her hawser, and left her in the way of the steamer's getting out, and this made it necessary to stop the steamer, and she again grounded, and could not be got off until the next morning. Next morning she was put to sea, leaving the bar clear. The tow-boat association had three ships awaiting inside near the bar, with the tow-boats alongside, and one outside, ready to put on the bar as soon as the steamer could be got off, so as to prevent dredging to open the channel. The dredges were then removed to Pass à l'Outre, it being evident that the association would not allow them to work effectively at Southwest Pass. Since that time the greater number of vessels coming and going from the port of New Orleans have been taken to Southwest Pass, the association being very careful to put only one vessel on the bar at a time, to prevent any blockade. The association prefer to have the dredges work at Southwest Pass, in order to force them from Pass à l'Outre back to Southwest Pass. A few days ago an attempt was made to blockade and destroy the channel at Pass à l'Outre by running a bark aground on the side of the channel. My assistant engineer, doing the dredging, reports that that was evidently the intention.

The CHAIRMAN. What is the maximum depth of water you can maintain by dredging at Pass à l'Outre?

Captain HOWELL. From 18 to 20 feet. I think I can maintain 20 feet. If I am permitted to regulate the use of the channel, I am sure that I can maintain 18, and perhaps 19 feet. I expect to get 20 feet.

STATEMENT IN RELATION TO A SHIP-CANAL ACROSS THE PENINSULA OF FLORIDA, MADE BEFORE THE SENATE COMMITTEE ON TRANSPORTATION-ROUTES TO THE SEABOARD, JANUARY 28, 1874.

BY HON. J. T. WALL, OF FLORIDA.

Mr. Chairman, and gentlemen of the Committee :

When partizan and sectional feeling shall have lost some of its rancor, and we shall have reached a point in our history when a full comprehension of the true mission of the Republic will be plain to all public men, regardless of party, calm and dispassionate consideration will concede that the paternal care exercised over the States by the Federal Government, in the matter of internal improvements, through tangible aid extended, has contributed in the past and will contribute in the future more toward the success of our system of government, the development of the resources of the States, and general prosperity of the whole country than all other causes combined.

Decadence of sectional prejudices.

Even in the present, sectional prejudices are losing much of their significance in the face of the material needs of the States hitherto most prominent in adhering to doctrines which falsely charge encroachment upon their functions when the General Government seeks, through legislation, to equalize the benefits of our vast monetary resources, and to harmonize the seemingly conflicting interests of the several sections of the country.

Land-locked channel.

The grand scheme of a land locked channel, or a system of inter-communication between the States whose produce naturally seeks a market through the valley of the Mississippi, and at ports on the Atlantic seaboard, by this shortest route to northern and foreign markets, is very appropriately receiving the attention of all earnest men throughout the land, and will doubtless be measurably successful through the careful investigations and unbiased recommendations of this committee.

Need of the aid of the Government.

That its accomplishment in the near future, in view of the requirements of the time, is assured, there can be no doubt, but no such work, cosmopolitan in scope and dimensions, can or ought to be susceptible of accomplishment without the aid of the General Government. The concession of this fact in the outset will place the matter in its proper light before the country.

Poverty of the Southern States.

The poverty, increased debt, and depreciated credit of the Southern States, the result of the war, combine to make the undertaking of a great international work of this kind, on the part of these States, simply impossible. To rely upon individual enterprise and the present and prospective resources of these poverty-stricken communities to join hands with the more wealthy sections of the country, which will be benefited to a larger extent by the accomplishment of this work, for such co-operation as is needed to put it on a successful footing, is to postpone action indefinitely.

The results of the war.

One of the results of the war is a perceptible impetus given to public sentiment in these States, which forces their institutions, habits, and laws to conform with those of the more enlightened and prosperous sections of our country, and, in emulation of their energy, enterprise, and progress, press forward to an equal place in the history of the nation.

The benevolence of the Government.

The broad benevolence which has in the past opened the channels of communication and intercommunication which has done so much for the development of the resources of other parts of the land, has the same mission to perform for the South; and in this interest it is not too much to hope that all southern men will be of one mind, both as to the needs of our people and of the country and the means to be adopted to accomplish the end in view. However much they may differ on minor questions, all will agree in pressing the claims of the South upon the General Government, and earnestly advocating the aid required to meet the growing needs of the commerce of the country and the demand of our increased foreign communication.

System of canals.

Granting the feasibility of a canal-route over the Tehuantepec survey, connecting the Atlantic with the Pacific, which is doubtless an accom-

plishment of the near future, and a work that will be mainly constructed by this Government, the plan for an internal chain of water-communication designed to meet the needs of commerce flowing through this canal from ocean to ocean, is of commanding importance. In this connection, the States bordering on the Gulf of Mexico, and those whose products naturally tend in that direction, deserve the consideration of this committee. The route recommended by the commercial convention which met at Baltimore in 1871, from the vicinity of Brownsville, in Texas, through that State, Louisiana, Mississippi, Alabama, and Georgia, with an outlet by ship-canal through Florida, connecting the Gulf of Mexico with the Atlantic, would be of little service and fall far short of the needs of commerce without an open channel through the State of Florida.

Florida ship-canal.

The geographical position of Florida will at once command attention when considered in connection with the prosecution of this work, and the importance of a ship-canal through that State has long since been conceded. A partial survey was made by order of the Government, with this end in view, and report made thereon, every way favorable, dated May 1, 1855, giving an elaborate description of the region surveyed, its many advantages, and the benefits that would accrue to commerce by the construction of the canal. This report in some particulars will answer general purposes without favoring the particular route surveyed or discriminating in favor of any other route recommended. I quote from the report of that survey:

Extract from report of survey.

"The general profile across the peninsula shows a gradual swell, both from the Atlantic and Gulf coasts, to the middle, where is found a range of broken sand-hills varying in height above the average level of the interior from one hundred to one hundred and twenty five and one hundred and fifty feet, and in width from one to three and four miles.

"The country is flat, thickly sprinkled with cypress and baygall swamps; and much of it to the eye presents no distinct or well-defined system of drainage." * * * "The line of canal found practicable, and recommended as proper to connect the head of navigation of the Saint John's with Tampa Bay, is as follows: Starting from the Saint John's at the mouth of Weekivah Creek, the valley of this stream is followed up until near its head, then in as direct a course as the nature of the ground will admit of to the low depression of sand-hills which form the crest of the summit divide of the interior; from thence the course is direct to the valley of the Hillsboro, which is followed until the depth of water in the river is sufficient, and its course direct enough to render it proper for the canal to enter it. * * * The object of a ship-canal across the peninsula of Florida is too obvious to need more than a passing notice. Attention has been turned to the subject since 1824, and examinations of different routes made. The interest which such an improvement possesses for the country rather increases from year to year, as the commerce passing the straits of Florida increases, and accidents attending that navigation become more frequent and more generally known. * * * The following extract from House Doc. No. 136, giving somewhat in detail the sources making

up the total value of the Gulf commerce in 1852, is inserted as the most recent information officially published."

The statement of the merchandise entering and leaving the American ports of the Gulf was then given, as follows:

Foreign imports	\$20,000,000
Coastwise imports	50,000,000
Exports	115,000,000

Value of shipping in the trade.

The shipping engaged in carrying on this trade, and arriving at the various Gulf ports, was estimated at nine hundred thousand tons, which, valued at seventy-five dollars per ton, would be sixty-seven millions five hundred thousand dollars; and as these vessels make the voyage *in* and *out*, the entire value of the tonnage, which annually passes Cape Florida was one hundred and thirty-five millions of dollars, which, added to the preceding amount of merchandise, made a grand aggregate of three hundred and twenty-five millions of dollars, which annually passes to and from the American ports of the Gulf of Mexico. To the above was added the increased value of imports, exports, coasting trade and tonnage during four years, together with the very valuable California trade and specie exports which had been passing through these straits at the time this computation and report were made, and we would have a grand total, with the increase of commerce for nearly twenty years, which makes the Florida ship-canal an absolute necessity.

Saving of time and money.

The time gained during a voyage in and out of the Gulf, according to the survey referred to, by using the canal, was stated at averaging six days; thus, a gain of eight days by a vessel bound into, and a gain of four days by a vessel bound out of, the Gulf. To this time it would be proper to apply an interest of six per cent. on all assumed capital engaged in the trade.

Take, for example, the value of the coasting-trade, the imports coastwise and the tonnage of the coast-trade. The total value of this was computed at the time of the survey at two hundred millions of dollars, exclusive of an increase in the valuable commerce of California and the Pacific coast for four years, the interest upon which for six days, the time saved by the canal passage, would be, at six per cent., two hundred thousand dollars per annum, and this, be it remembered, without computing the enormous increase in the value of property engaged in this commerce during two decades. And aside from this, the importance of a ship-canal through the peninsula of Florida to international commerce is three-fold:

1st. A saving of a large proportion of the insurance now imposed by the perils of navigation by the Florida Straits.

2d. Avoidance of that navigation and consequent benefit accruing to property of this class, as will be shown hereafter.

3d. An important saving of time, hence of interest, on capital engaged in this trade.

Commercial advantages of the canal.

From these facts alone I respectfully submit that it is clearly demonstrated that the construction of this ship-canal through Florida would

bear a more important relation to the commerce of the Gulf, in which the whole country is interested, than toward the State of Florida, or any of the States bordering on the Gulf. It is an accepted fact that all produce finding its market on the Gulf nets less to the producer than the same class of produce finding its way to the Atlantic sea-board. On this principle all internal communication now projected by the chief sea-ports on our Atlantic front, and advanced by this committee and the friends of the development of our national resources, naturally tend toward the valley of the Mississippi and tributary streams, and the other streams emptying into the Gulf.

Rivers flowing toward the Gulf.

In the general system of communication and intercommunication, now before the country and commended to this committee, doubtless the claims of the rivers referred to have been advanced, in connection with its general features; as well as many others which attract attention and are navigable during the most of the year for heavier draught vessels than those which ply the coast, from St. Mark's to the Rio Grande.

In view of this fact it would be feasible when the canal through Florida is completed, for light-draught vessels loaded on the Upper Missouri, Mississippi, Ohio, Arkansas, Red, or in fact any of the rivers of the Mississippi Valley or Gulf States, to proceed at once, *without breaking bulk*, to any *Atlantic sea-port*.

The commerce of all the rivers referred to tends toward the Gulf, not excepting the Ohio, nine-tenths of which goes down the river.

Inland communication from Lake Superior and back.

A vessel on either of the great lakes, Superior, Huron, Erie or Ontario, started toward the western waters, can reach the Mississippi by three different routes, and descend that river to Lake Pontchartrain, and keeping inside the sea-islands and reefs which skirt the coast, forming a protected inland navigation, will reach the western terminus of the Florida ship-canal, and cross the peninsula and the inland navigation along the coasts of Georgia and South Carolina, to Savannah or Charleston, and, with the exception of a short break on the coast of North Carolina, this internal communication continues thence, uninterruptedly to New York, up the Hudson River, across the State of New York by the Erie Canal, and into the lakes from whence it started.

Considerations in favor of the canal.

Two very important considerations in favor of the construction of the Florida ship-canal are—

1st. Without exception it will be the safest water communication between every important city in the United States for light-draught vessels.

2d. A boat loaded on the highest navigable waters of the Missouri may unload on the Atlantic sea-board.

As will be seen, the ship-canal through the peninsula of Florida, while shortening the passage from South to North, would afford a sheltered and protected navigation from New Orleans to New York, which cannot, in case of war with a foreign power, be readily interrupted by the

enemy's forces, even supposing them in complete possession of the waters bordering on the coast.

The position assumed is entirely tenable when it is demonstrated that there are but three short breaks in the entire inland navigation from New York to New Orleans. And these advantages can be secured to the country by the completion of the Florida ship-canal *alone*; without reference to other intercommunications, improvements very justly considered in this connection.

Losses to commerce by navigation of Florida Straits.

It is perfectly safe and within bounds to estimate the commercial property, *at this time*, which annually incurs the risks consequent upon the need of a ship-canal through Florida, at *five hundred millions of dollars*.

The immense extent of the actual risks incurred will be better appreciated by a knowledge of the number of vessels partially wrecked on the Florida coast from 1848 to 1859, inclusive, with the values of vessels and cargoes, the amount of salvage allowed, and the total expenses incurred by vessels adjudicated at Key West:

Years.	Vessels.	Value.	Salvage.	Total ex- pense.
1848.....	41	\$1,282,000	\$125,000	\$200,000
1849.....	46	1,305,000	127,870	219,160
1850.....	30	929,800	122,831	200,860
1851.....	34	950,000	75,850	165,000
1852.....	23	675,000	80,112	163,000
1853.....	57	1,973,000	174,950	330,100
1854.....	59	2,469,000	182,400	211,808
1855.....	80	2,844,177	100,495	190,910
1856.....	71	2,000,000	163,117	262,664
1857.....	59	1,837,950	101,890	171,772
1858.....	52	2,692,000	142,182	247,557
1859.....	66	3,035,400	198,404	293,497
	618	23,043,327	1,595,101	2,666,388

The total wrecks south of Cape Canaveral, unadjudicated, would probably foot up an equal amount in number and losses.

Several routes recommended.

Of the several routes recommended for the canal through the State of Florida, I shall not presume to indicate a preference of any one to the prejudice of the others, feeling assured that the matter will be satisfactorily arranged and the route fixed by the survey recommended and contemplated in the report of May 1, 1855.

The route surveyed.

Of the route surveyed at that time it has been stated that a straight line drawn on the map of Florida, across the narrowest part of the peninsula, from the Gulf to the Atlantic, will strike from the mouth of the Withlacoochee across Lake George and reach the ocean near the head of Matanzas River. Then the three points, the mouth of the Withlacoochee, Lake George, and the mouth of the Saint John's and Fernandina,

are on or near the shortest route across the peninsula, and the most direct and shortest route from Yucatan to New York.

This route would begin at the mouth of the Withlacoochee, running up that river to Lake Pansoffkee, thence, with fourteen miles of canaling, to Lakes Dunham and Harris, with one and three-quarter miles of canaling to Lake Griffin, thence with three miles of canaling to Buck Lake, and thence with eighteen miles of canaling to Lake George, which terminates the necessity of any improvement except that of the inside passage to Fernandina, if that point be made the port of final shipment for heavy-draught vessels.

Silver Spring route.

Another route which has attracted some attention also starts from the mouth of the Withlacoochee. It is from the starting point—

To Fort Clinch.....	9 miles.
To Blue Spring.....	15 "
To Silver Spring.....	24 "
Through Lake Kerr to Saint John's River.....	28 "
Entrance of canal to mouth of Saint John's	90 "
Through "Sisters" to Fernandina.....	20 "
Total	186 "

Of this route it is stated that the track of a vessel passing around the peninsula of Florida measured from a point in the Gulf west of the mouth of the Withlacoochee, to one due east from Fernandina in the Atlantic, is not less than *one thousand and fifty miles*, while the whole length of the inland navigation, from the mouth of the Withlacoochee to the bar at Fernandina, is *one hundred and eighty miles*, saving in distance *eight hundred and sixty-four miles*. A steamer speeding at an average of eight miles per hour at sea would require *five days and eleven and a quarter hours* to make the passage; while estimating through the canal proper—*sixty-two miles*—at four miles an hour and eight miles per hour via the Saint John's and Sisters the rest of the distance, with two hours for detention at locks, the passage through would require a little less than *thirty-three hours*—a saving in time of *four days and two and a half hours*.

Suwanee and Santa Fé route.

Another route commended for a ship-canal is from the mouth of the Suwanee on the Gulf, to the head of navigation on the Santa Fé River, thence by excavation to Black Creek, thence to the Saint John's River, thence through the "Sisters" to Fernandina.

Other routes.

In addition there are other routes recommended for the possession of desirable advantages for a ship-canal; but I shall not presume upon the patience of the committee by elaborating at length upon them, but will be content to give a general description of all, with their outlines and topography, and commend them all to the attention of the committee, with the earnest hope that they report in favor of a survey to decide upon the most feasible route.

Inland steamboat passage.

An inland passage for steamboats is also recommended, extending from the Saint John's River to Key West, by way of Pablo—near the

mouth of the Saint John's—North River, Mantanzas, Halifax, Musquito, Indian River, and Jupiter, Lake Worth, Hillsborough, New River, and Biscayne Bay. The route would be almost straight, and inside all the way to Key West; nowhere more than a mile from the sea.

This is, also, respectfully commended to the consideration of the committee.

Fernandina or Saint Mary's Harbor.

One fact in this connection may be taken as conclusive, and that is, that the Fernandina or Saint Mary's Harbor is the natural terminus of any canal through Florida, connecting the Gulf with the Atlantic; for it is the best port on the Atlantic coast capable of admitting vessels of larger draught than ten or twelve feet; hence the only place where trade would center on its way eastward and be met by vessels for distribution to home and foreign markets.

The claims of Florida.

I take the liberty to call the attention of the committee to the area, population, soil, and products of Florida, and the consequent opportunity for development in the event of the construction of this great work of international importance now under consideration.

Area.

Florida is a much larger State than Illinois or Iowa. It contains fifty-nine thousand two hundred and sixty-eight square miles, or thirty-seven million nine hundred and thirty-one thousand five hundred and twenty acres. According to the records of the Land-Office, there have been sold one million eight hundred and twenty-two thousand four hundred and thirty-one acres; entered under the homestead law, three hundred and eighty-nine thousand one hundred and forty-seven acres; granted for military services, four hundred and sixty-five thousand nine hundred and forty-two acres; officially approved under railroad grants, one million seven hundred and sixty thousand four hundred and sixty-eight acres; approved as swamp-land and given to the State, ten million nine hundred and one thousand two hundred and seven acres; granted for internal improvements, five hundred thousand acres; granted for educational purposes, one million six hundred and sixty-three acres; granted to individuals and companies, fifty-two thousand one hundred and fourteen acres; granted for Deaf and Dumb Asylum, twenty thousand nine hundred and twenty-four acres.

Population.

According to the census of 1870, the population of the State was 187,748. Since 1860 the colored population has increased from 62,777 to 91,698, and the white from 77,746 to 96,059.

Soil.

Perhaps in no State in the Union can there be found so great a variety of soil as in Florida. This is at once apparent when it is considered that there is scarcely a vegetable product of any portion of the country that is not found flourishing in tropical luxuriance in Florida, besides a very long list of which that State enjoys a monopoly.

Climate.

A writer describes the climate of Florida as eight months of summer and four of warm weather. This is measurably true, but it must not be understood as conveying the idea of the intense heat of the tropics; on the contrary, during the summer of 1872, memorable for its great and oppressive heat, when the thermometer in New York, Boston, and other cities North showed occasionally a temperature of 104 degrees, the highest range attained in Florida was only 96 degrees, and only twice was it observed at that height. The mean average during the entire summer will be found only a few degrees above that of the Northern States. The climate of Florida resembles in equability that of Barbadoes or Maderia, both of which are held in high esteem by physicians as resorts for invalids. The healthfulness of Florida is one of its chief characteristics, and its sanative influences are so well recognized that it has become of late years an asylum for invalids from all parts of the country.

Products.

The principal products of the State are, timber rich in naval stores, cotton, sugar-cane, vegetables of nearly every species grown in the gardens of the North, Indian corn, rice, indigo, sisal hemp, ramie plant, tobacco, and arrow-root.

Fruits.

Florida is exceptionally prolific in fruits, and their culture, developed by proper inter-communication, will become one of the most valued auxiliaries of our commerce. The orange, grape, fig, peach, banana, plain-tain, cocoa-nut, guava, lemon, lime, pine-apple, quince, and pomegranate, grow spontaneously, and need but the inducement of a safe and quick means of transportation to be developed into one of the safest industries of the country, capable of supplying the demand of the whole country for these luxuries; and would, undoubtedly, because of their greater abundance, so lessen their price to the consumer, as to place them within the enjoyment of all classes of our citizens.

Market gardening.

With better means of communication, market gardening will become one of the most remunerative callings in the State. Peas, beans, lettuce, cabbages, cucumbers, tomatoes, egg-plants, turnips, beets, radishes, green corn, asparagus, and rhubarb can be placed in New York two months before the vegetables of any other section appear; and at prices at once reasonable to the consumer and profitable to the producer.

General advantages.

The advantages accruing from the soil, climate, and products of the State, it will be seen, will be general, contributing much toward the facilities and economy of commerce and the development of comparatively new industries, that any other single State whose inter-communicating facilities are sought to be augmented.

System of quick transportation.

The system of cheap and quick transportation in contemplation would be of little avail if the produce of the "Great West," which naturally

finds its way to the valley of the Mississippi, and via that river to the Gulf ports, did not find an outlet through Florida to the Atlantic seaboard, which is situated just across the pathway of trade between New York and New Orleans.

Demands of commerce.

National and international commerce demand a highway across the peninsula of Florida for vessels which traverse the Gulf of Mexico, and the natural resources along any line which may be adopted through Florida, as the most practicable, assure an easy construction without the costly appliances of art.

The completion of this canal presents such advantages to the commercial world in the saving of time, distance and expense, the avoidance of dangerous navigation, economy in extra insurance to the extent of millions, and the saving of fortunes annually lost in vessels plying through the straits of Florida, that with some degree of faith I express the hope that this project will be first to secure the favorable consideration of this committee and the Government.

Advantages of general canal facilities.

This canal, in connection with the one contemplated across the Tehuantepec survey and the Southern Pacific Railroad, will open the highway to the Pacific Ocean and to all Eastern Asia, and establish commerce with Japan and China and the East Indies, as well as open to the world the granaries of the "Great West."

Benefits to the Government.

In peace it will give to the United States Government a prestige and power that will place the nation in an advanced position; and in war, a land-locked channel, and secure passage for our Army and Navy. I am sure I express the sentiments of the people of the State of Florida and of the South when I present the assurance of their commendation of the earnestness with which these investigations have been prosecuted. And that they have the fullest hope, and entertain the earnest wish that the results of the arduous labors, so faithfully performed at all seasons and localities, will be alike creditable to the Transportation Committee of the United States Senate, the Government of the United States, and conduce to the welfare of the country and the commercial interests of the civilized world.

WASHINGTON, D. C., February 10, 1874.

JAMES B. EADES, civil engineer of Saint Louis, Mo.

The proposition is to deepen one of the mouths of the Mississippi River, and not to receive pay from the Government until the results which are guaranteed are produced. For 28 feet of water the cost to the Government would be \$5,000,000; \$2,000,000 it is proposed shall be paid when 20 feet is obtained and certified in a manner satisfactory to the President of the United States, and, as that depth is increased proportionally to 28 feet, the remainder of this amount will become due to myself and associates; and, thereafter, when 28 feet shall have been

obtained, for every year that depth shall be maintained uninterruptedly, the sum of \$500,000 shall be paid for ten years to strengthen and sustain the works which it is proposed to build there. The execution of these works will produce this depth immediately on their being executed; they will have to be strengthened afterward by the deposition of stone and in other manner, and this \$500,000 per annum is to provide for that additional work.

The principles which underlie the method which I propose to use may be referred to two simple laws—one having reference to the effect of the current, and the other the influence which retards the flow of it. These streams are simply transporters of heavy materials to the sea, and their power to transport this material depends upon the rapidity of the current. All streams passing through an alluvial or sandy region will pick up from the sides and bottom of the channel the load which is due to their velocity. The moment that velocity is slackened a portion of that load is let go. The moment that velocity is increased they commence to take up an increased load.

I call your attention to one phenomenon which is familiar probably to Senator Alcorn. We have in the Mississippi River many instances where one bend has the banks on its concave side rapidly destroyed at times, while the corresponding banks in the bend below is not at all injured. Engineers and the writers on these subjects refer the destruction of the banks to the impinging of the current against them. I take issue with them on that, because such a theory will not account for the phenomena that are presented. One bank, in one bend, may be caved in while the reverse bend, just below, may have its bank totally uninjured, while the same rapidity of current exists in both bends. Invariably above the bend which is being destroyed we find a *wide* portion of the river where the shoals and bars are found. Now, if we imagine a rise in the river of any given depth, say 10 feet, coming down, its current will be increased by being crowded into the bends above, and as its velocity increased, so would the amount of solid matter carried by it be proportionately increased. The moment it comes into this wide expanse of the river, its current is checked because it cannot fill that cross-section of channel-way and maintain the same velocity; hence it lets go its load and forms the bars which are only found in these wide places. As the stream passes on, denuded of a portion of its load into the next bend below, it recovers its load as its current is again restored, and when thus loaded it goes into the second bend below without the power to abrade or injure it at all. In proof of my theory I will cite the instance of the Bonnet Cérre crevasse. The depth of the river, and a cross-section of it, had been obtained by engineers, both below where the crevasse occurred and above. The depth of water just above the crevasse was 130 feet to high-water mark, and below it was 130 feet also, *prior* to the crevasse. After the crevasse had occurred it was found that the bottom of the river had filled up 50 feet below the crevasse, leaving a depth of only 80 feet. The application of this law to the solution of this phenomenon is perfectly plain. The *volume* of the water, which was necessary to fill the original cross-section of the river, and maintain the velocity requisite to keep its load in suspense, was not there after the crevasse had occurred. A large portion of that volume had passed off by the crevasse, and what remained was not sufficient to fill that cross-section and maintain the same velocity; hence it had to flow slower when past the crevasse, and the slower speed resulted in depositing a portion of the load and reducing the sectional area of the channel. This deposition continued until the capacity of the channel was suffi

ciently reduced to restore to the current the proper velocity, and when this was done no further deposit could take place.

The whole southern portion of the Mississippi River, from Bayou Sara down, is an illustration of the truth of this theory. Here is a bend just above Fort Saint Philip which has existed perhaps as long as the white man has known this river, and the whole current goes directly against its concave bank—impinges against it without perceptible effect. It still stands there, and it will be noticed that it is quite as narrow there as at any other part of the river.

The width of the river is remarkably uniform for the last two hundred miles, and it is remarkably uniform in the passes until they come out to the sea.

I alluded to a second law that is concerned in the solution of this problem, which refers to the friction, or retarding element, checking the flow of the river. The greater the frictional surface of a given body of water the more slow will it flow over that surface with a given inclination. This explains why streams like the Ohio, the Tennessee, and the Cumberland, with a very much greater fall per mile, have less current than the Mississippi River. The volume of the Mississippi River is so great in proportion to the friction of its sides and bottom that it flows much more rapidly than those streams.

In the Southwest Pass there are several miles where the width of the stream is very uniform, and the depth is equally uniform. Wherever the river widens the depth shallows. The narrower it is, the less frictional surface will there be beneath it. When we enter the Gulf we encounter a third element in the problem, which is the reflex action of the waves, caused by storms that stir up the bottom, and drive the material in against the shore. Through this material thus driven shoreward the Mississippi has to struggle and make its way. This reflex action is superficial, however, in its effect, and does not extend more than 20 or 25 feet below the surface. It takes very violent storms to disturb the material which lies on the bottom in that depth of water.

If we assume that in the Southwest Pass, with a width of a thousand feet, we have a depth of 60 feet of water, we will continue that depth by building parallel jetties of the same width to the crest of the bar and having but a thousand feet between these jetties at the crest of the bar, we have every right to infer that we will have 60 feet of water between them, as we have between the banks and in the pass above. It should be borne in mind that a river will flow through still water with less friction than through earth. Therefore, when the river debouches into the salt water, it suffers no greater retardation by meeting the water of the sea and passing through it than it encounters in the pass itself, where it is inclosed by a wall of earth. It is a fact that in the Mississippi River, just below the mouth of the Missouri, in times of flood, the Missouri River marks its channel distinctly in the Mississippi River for twenty miles; the line of demarkation between the two rivers is plainly seen.

At the Southwest Pass we have a width of 10,000 feet across the bar, as against a thousand feet in the navigable part of the pass itself. It is evident that the river is unable to maintain the depth which it has in the pass over this great width at its mouth; hence it must let go a portion of its load and shoal up at its mouth until its velocity is restored by this shoaling process. The stream will make its own width of channel or its own depth of channel. A certain velocity and a certain volume requires a certain area. If it does not get it in width it will get it in depth, and when it has that it ceases to deposit and to cut.

The deposit which is going on at the mouth of the Mississippi River is *beyond* the bar, and on the shore-lines where the river is very wide, the current being most rapid in the middle or deepest part over the bar.

By the CHAIRMAN:

Question. Will not your plan require the closing of the other two mouths of the Mississippi?

Answer. Not necessarily.

Q. If you narrow this channel near the bar, where it is quite wide, to a thousand feet, while it is at its present depth, will not that require the other two mouths to be closed?

A. Not at all. It would be impossible to construct jetties so rapidly as to cause the water to back up above if they were parallel jetties, and no greater in width than the narrowest part of the pass.

Q. After you have narrowed the channel to the crest of the bar, will not the deposits on the outside be made in the same condition that they are now, and require a perpetual continuation of your jetties?

A. The deposit which is going on out of the bar, and by which the continual growth of the river is affected, into the Gulf, is the result, mainly, of the reflex action of the waves in stirring up this sediment and driving it back, extending the shore-line of the whole delta of the Mississippi River. That action, as I have said, is superficial; that it does not extend very deep. It is found to be a remarkable fact that wherever the jaws of earth or banks of a stream extend out into the sea, boldly protecting the mouth of the stream from the lateral action of the waves, there is no deposit, and the mouth is invariably deep. The Mississippi has no such jaws of earth, or protecting banks.

Q. You insist, then, that by extending this thousand feet by means of jetties to the crest of the bar, the force of the water would carry out the deposit of the water, and that it would accumulate on the outside as it has heretofore done?

A. I mean that it will not accumulate in front of this outlet. The material will unquestionably be thrown back on each side of the jetties, and in a long course of time the shore-line may be advanced to the jetty-heads. After the shore-line has reached the jetty-heads, then, a recurrence of the present phenomenon of the Mississippi River—its fish-tail form—will be reproduced.

Q. And the jetties have to be extended?

A. Yes, sir.

Q. What has been the system of jetties tried at the mouth of the river, or has there been any such system tried?

A. Messrs. Humphreys and Abbot, in their report on the physics of the Mississippi River, page 455, indorse the jetty system for its improvement; and they state, in a foot-note at the bottom of the page, that the jetty system has *never* been tried at the mouth of the Mississippi. I am glad that my attention has been called to this, as it enables me to refute a statement which has been advanced in opposition to this theory that the jetty system had been tried there by Craig and Rightor. The foot-note referred to states that the contractors (Craig and Rightor) built a single line of insecure jetty, which could not stand the force of the sea.

By Mr. WEST:

Q. What do you call parallel jetties?

A. Those which would give artificial banks to the river, like those which the river has above, one on each side. I will state that the mis-

take which is made in the application of the jettee system by engineers comes from a want of observance of the laws which regulate the carrying capacity of the stream. They are frequently designed converging. The result is that we invariably find shoal water where the jetties are wide apart, and deep water at the mouth of the jettee.

Q. Where would you propose to begin the upper portion of the jetties?

A. That would be a matter which I should want to give some more mature thought to before commencing. I would not want to place them so narrow as to produce a depth of 60 feet, which I should get if I put them only a thousand feet apart, because 60 feet of water would involve a great difficulty in maintaining the jetties.

Q. It would be some place higher up the river than the commencement of the bar, would it not?

A. It would be at least five miles above the bar.

Q. Then you will continue those jetties, as I understand you, directly to the bar?

A. Yes, sir; to the crest of the bar.

Q. And is your theory, then, that the increased velocity of the current which you will get by confining and concentrating the volume of water will cut the bar out?

A. I will explain that the velocity which will be found between those jettee heads or outlets will be no greater than it is to-day after they are completed. During their construction the current will be accelerated to some extent. That acceleration is equivalent to loading up, taking out the material from the bottom, the only place it can get at, and it will gradually increase its cross-section there until the present current is maintained.

Q. Making the increased velocity perform the functions of a dredge on the bar?

A. For the time being, and after it has been deepened to its normal depth, then the velocity will only be that which is necessary to carry the load which the stream has, out into the sea, because if it were any greater than that it would continue to cut. I want to make that plain to you, that if the velocity were more rapid than it is to-day it would continue to cut as long as it were maintained more rapidly.

Q. By the construction of these jetties do you propose to confine the entire volume of the river in that particular pass within those jetties?

A. Yes, sir; unquestionably.

Q. There will be no escaping, if I can so express it, above the jetties?

A. There will be no reason for that whatever, because the jetties will create no rise above.

Q. Then, as I understand you, you will take the points of width of the river naturally that you want to maintain for the width of your river when the jetties are completed?

A. Yes, sir; and that width would probably be 1,500 or 1,800 feet, so that instead of having a little channel for ships to pass in and out, it would give you a magnificent entrance into one of the finest harbors in the world.

Q. Your proposition is to the effect that when 20 feet is obtained you shall be paid \$2,000,000. I understand from the Chief of Engineers, General Humphreys, that he can obtain 20 feet of water by doubling the present dredged force, now made use of by the United States, which would cost \$500,000 per annum.

A. The possibility of dredging the channel by the present system, at

the mouth of the Mississippi, is utterly out of the question. If you increase the cross-section of the river at the bar, you require an increased volume of water to maintain the same current. You have no increased volume of water, but you increase the section by the dredge, which diminishes the current and causes a constant deposit right in the place; fills it up as fast as you can dredge it out. The present system of dredging is carried on, not by removing the earth, but simply by stirring it up from the bottom with the fallacious idea that the current of the river will carry it out to the sea. The current being already loaded with all it can carry, will take up no more, and the material settles back.

Q. How do you account for the fact that it does by its present excavating process increase the depth?

A. The present method of dredging is by stirring up the bottom with the propeller-screw of the dredge-boat, having an iron apron inclined behind the propeller at such angle that the muddy water is thrown up near the surface over this apron, for the purpose of getting it up as high as possible in the stream. The effect of the propeller is simply to stir up the bottom, soften the mud, and make it more easy for a ship to plow her way through it, and this increased depth results from that operation. The fact that it is of no permanent character at all is shown by its continually filling up immediately after the dredge-boat leaves it. Again, by producing a depth of 20 feet of water by the dredge-boat, if it were possible, it would simply be a narrow channel through which it would be very difficult for ships to steer with accuracy in the waste of water that is down there, without buoys or channel-marks, and they would be constantly liable to go aground. My proposition does not simply stop with the obtaining of 20 feet of water, but it provides for a payment to me and my associates, when I shall have obtained 20 feet, and given that evidence to the Government of the plan being successful.

Q. Then if you obtain 20 feet for three months, and were paid the \$2,000,000, that would be an acquittal on your part of your part of the contract, would it not?

A. Yes, sir; that might be so construed. It would not be considered so by me nor by my associates, because when 20 feet is obtained it will be at an expenditure of certainly three-fifths of the total cost of producing 28 feet. To get 20 feet would be an absolute proof of our ability to earn the remaining \$8,000,000.

Q. Do you distinguish technically by your terms between the heads of your jetties and the termination that is on the crown of the bar? What do you call that?

A. That is called the head of the jettee.

Q. What would this be farther up the river?

A. There is no particular name to that part. It is the upper end of the jettee.

Q. As to the construction of the head of the jetties, which will be on the crown of the bar, will they be exposed to the action of the sea in the case of a violent storm?

A. Yes, sir.

Q. What will be their nature; a permanent mason-work?

A. They will be composed of stone to a large extent.

Q. Sufficiently strong to meet that difficulty?

A. In answer to your question, I will state that the bill will provide for an annual payment of \$500,000 for the purpose of strengthening and improving and protecting these jetties; and that \$500,000 is based solely on the fact that we maintain intact 23 feet of water. The ex-

penditure necessary to keep up these jetties I do not think would amount to \$500,000.

Q. Per annum, do you mean?

A. Per annum. It might amount to a hundred thousand; it might amount to two hundred thousand; it might possibly amount to \$500,000 for the first two or three years; but it would be manifestly to the interests of the company to make them so substantial that they would save this large income as a profit resulting from their enterprise.

Q. Am I to understand you, then, that your proposition first embraces a payment of \$2,000,000 when 20 feet is reached, and three millions more when 28 is reached?

A. No, sir. The depth is increased proportionately from 20 feet up to 28 feet. The amount is paid for proportional.

Q. But the additional amount of three million is up to 28 feet?

A. Yes, sir.

Q. Then, having attained \$5,000,000, you expect that the Government shall pay \$500,000 per annum for ten years to maintain the maximum depth?

A. Yes, sir.

Q. So that we are to give \$10,000,000 for this process, and it is guaranteed to us for ten years. What do we do at the end of that time?

A. Then, having established the fact that this is the proper method of improving the Mississippi River, I think the Government ought to be able to take care of it itself.

Q. At what expense?

A. It would be difficult for me to predict with any positive certainty what the expense would be, but it ought to be very little manifestly.

Q. A hundred thousand dollars a year?

A. I am inclined to think that it would not cost five cents for fifty years afterward. I doubt whether this company would have to pay \$500 for improvements or strengthening those jetties five years after they were executed.

Q. What would be the probable expense of maintaining this channel after the contract with you has been entirely completed? For instance, we see now an expenditure of \$10,000,000 and we have a guarantee in ten years. Now you express your opinion that that will be all that the Government will be required to pay.

A. I say I do not believe they will have to pay five dollars in the next fifty years.

Q. Then there is this difference between the engineer's plan of the Fort Saint Philip Canal and yours. You feel quite satisfied that if your theory is carried out at an expense of \$10,000,000 we will have 28 feet of water?

A. Yes, sir; with a magnificent width.

Q. Yes, and they feel satisfied that with an expenditure of the same amount, perhaps, we will have 28 feet of water. Now is not one a plan which has been illustrated and proved by the experience of many other canals, and is not yours a theory which has scarcely been tried with any advantage yet?

A. No, sir. I do not know of a river or stream liable to make a great deposit where a canal has been used successfully, but I do know where a similar stream to the Mississippi has been deepened in this manner.

Q. The Danube?

A. The Danube. I do know that they are constructing similar par-

allel jetties for the improvement of other outlets to the sea in Holland—the Maas, from Rotterdam to the sea.

Q. How does the character of the deposits held in suspense by the Mississippi River at its mouth compare with the character of the deposits held by the Danube?

A. I think there is more alluvial in this than there is by the Danube. I have only been on the upper portion of the Danube. I have traveled four hundred miles on it, and that portion very much resembled the Mississippi River, particularly as you get near Vienna.

Q. What in brief have been the results obtained, the extent of the jetties, expense, and the increased amount of water at the mouth of the Danube?

A. The water has been increased at the mouth of the Danube from 9 feet to 20 feet, and 20 feet has been maintained during the past three years. My information is recent on the subject, within the last three months, and I am sure that up to that time there was no indication, whatever of shoaling up or lessening of the depth which had been maintained there for three years. I will state further that the Danube has some features which would make it more unfavorable for this kind of an improvement than the Mississippi. The Gulf deepens at a distance of two miles from the bar to 950 feet. Sir Charles Hartly told me that they went out several miles from the Sulineh mouth of the Danube, with very little perceptible increase of depth. I understood him to say that some two or three miles out there was only a depth of 30 or 35 feet of water. In comparing the expense of maintaining this and the expense of maintaining the canal, it will be found that the canal and its locks will need constant dredging, and the lock-gates and other parts of the canal will need quite as constant repairs as these jetties possibly can.

By the CHAIRMAN:

Q. What was the cost of the Danube improvement?

A. I am not able to state positively, but I think it was a million of dollars—something over a million. The length of the jetties was less than a mile. I believe the longest jetty was 4,600 or 4,800 feet. I will state that the plans of Sir Charles Hartly, as he assured me himself, were submitted to a board of international engineers, convened in Paris, representing the various governments concerned in that improvement, and they were condemned by that commission of engineers.

Q. Then your preference for this plan over the canal, is that the canal has not been tried in a parallel instance, as I understand you to say?

A. In a parallel instance.

Q. But that the expense of maintaining the canal, you think, will be quite as expensive as this?

A. I think it will be more so; much more so, because the expense of the canal is inevitable and without end. The locks must be dredged.

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